

Bob Cooper's

FEBRUARY 15 2007

SatFACTS

MONTHLY



Reporting on "The World" of satellite television in the Pacific and Asia

IN THIS ISSUE

**FreeView
Approves 1st
Receiver**

**One Reflector:
7 (or more)
satellites**

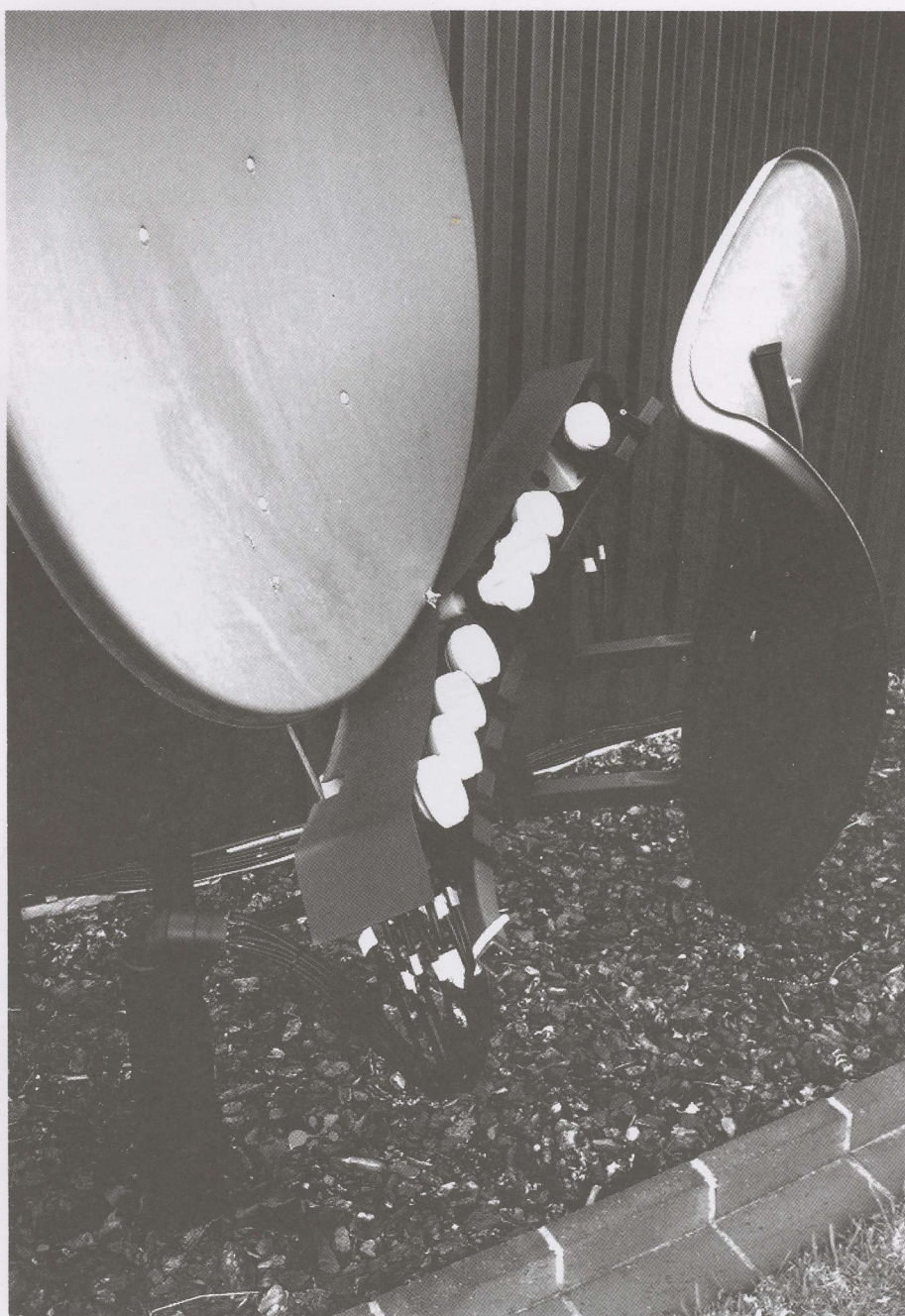
**The World
Converts
to Digital**

- ✓ Latest Programmer News
- ✓ Latest Hardware News
- ✓ B1 Shuts Off
- ✓ Observer Reports

Vol. 13 ♦ No. 150

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SatFACTS MONTHLY

ISSN 1174-0779

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This publication is dedicated to the premise that as we enter the 21st century, ancient 20th century notions concerning borders and boundaries no longer define a person's horizon. In the air, all around you, are microwave signals carrying messages of entertainment, information and education. These messages are available to anyone willing to install appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of these messages in the privacy of their own home. Welcome to the 21st century - a world without borders, a world without boundaries.

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our 13th year!

COOP'S COMMENT

There comes a time when we must admit to ourselves that technology has run amuck - clearly there are more new gadgets, software programs, 'things' than even a dedicated individual can absorb. And this is further complicated by the speed with which new developments are spread world-wide by 'the web'. My close friend and confidant, Ian who lives someplace in Australia and 25 years my junior, is convinced 'the web' will, "*destroy mankind as we now know and cope with civilisation.*" Ian may be an optimist.

The change over from analogue to digital is so compelling that virtually nobody wishes to stand up and protest the changes. Yet as we discover and rediscover daily, digital is not necessarily an improvement over analogue - it is simply different. For Ian, who has serviced virtually every analogue device from electron microscopes to TV masthead amplifiers, and begins from a sound and knowledgeable electronics base, it is not the technology of the circuits that dismays him. Rather, it is the human relationships that follow when an individual gives up "the analogue life" for "the digital life."

Television, the delivery of images and sound from one origination point to hundreds/thousands/millions of reception points, was 70 years young in 2006. From the earliest 405 video line images broadcast by the BBC to today's 1076 line plus consumer screen images television as a technology has matured, reinventing itself time and time again. Ian is concerned about the social impacts of digital. "*What happens when the local 'tip' must somehow deal with thousands, tens of thousands of analogue TV receivers and recording devices? Who has thought about, planned for that eventual day when an entire community shows up hauling cathode ray tubes and plastic cabinets for disposal? Suppose Australia says 'On February 1, 2010 all analogue TV will cease'? Does that mean that on February 2, 2010 hundreds, thousands of vacuum protected CRTs end up being dumped on an unsuspecting, ill-prepared tip operator?*"

Human beings are creatures of mass impression - and TV has become the primary tool of making impressions. If we are told, and shown on the cathode ray screen, it is time for the evolution to complete digital, how will we react? For seventy years now - essentially covering 93% of all living humans, we have stared at a CRT and accepted analogue as the way it is done. "*Take them to the tip*" the messages will state, "*Replace them with digital.*" And the majority will dutifully load up the boot with still functioning plastic cabinets and head for the garbage facility.

Unfortunately this transition will be anything but clear cut and clean. The very delivery method we have accepted from 1936 onward is itself challenged by newer technology; primarily the delivery of video and sound through the telephone plant. The race, and that is the correct adverb, to replace OTA (over the air) has now shifted into high gear and it will not end until something newer, better, different comes along to replace it. The deployment of ADSL2+ (obviously the name was chosen by a drunken Russian!) in New Zealand begins in March, just one more step to the eventual maturity of telephone delivery in the region of 1 gig of data each second. My amigo Ian wishes it would all go away. It will not and he knows that in his heart but holds out hope that somehow digital will stumble over itself and the world will readopt the tried and tested analogue. Of course that will not happen, sorry Ian.

Which brings us to satellite delivery - still the least expensive delivery of megabits of data to a wide geographic area. It is likely to outlast terrestrial digital simply because it costs less per home delivered. Millions will hold onto their no longer relevant analogue receivers and stick a set top digital to analogue box in front to milk a few extra years out of their rapidly fading investments. As a businessman in this transitional world, your challenge is to work out how you will adapt as Ian refuses to do to the digital transition.



February 15, 2007

In Volume 13 ♦ Number 150

First FreeView Approved Receiver -p. 7; One reflector 7, even 8 satellites! -p. 12; Challenges as world turns digital -p. 22

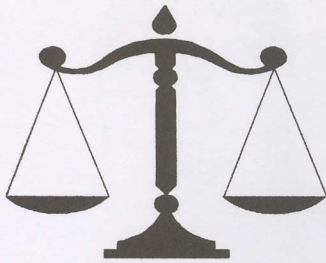
Departments

Programmer/Programming -p.2; Hardware/Equipment Update -p. 4; SatFACTS Digital Watch -p. 23; Supplemental Data -p. 26; With The Observers -p. 27

-On the cover-

One reflector: Count the LNBs! (Roger Woodward)

SatFACTS Monthly February 2007 ♦ page 1

**Pat on our back**

"This magazine is great and wonderfully accessible for newbie/amateurs like myself. Well done!"

ACM, Auckland

What year is this???

"Noticed bottom of page numbers for first three (pages) January said it was 2006 - then corrected. Couldn't afford a current calendar?"

Billy J, Wellington

While we appreciate the "I read EVERY word" passion for SatFACTS, anyone who actually reads and notices our page numbers and is concerned about our screwing up which month (and year) it is or will be when issued is a worry!

French TV in NZ

"My mum lives in Hatfields Beach, north of Auckland, and she would like French TV. There are hills to the west which rules out TV5 on AsiaSat 3 which appears to be around 8 degrees elevation anyhow. This leaves the I701 subscription service. Do you know of anyone in this portion of NZ who has been successful in receiving the New Caledonia-plus (Canal Plus) bouquet? I can arrange the card and receiver but am concerned with how reliable this reception might be. Craig Sutton (www.apsattv.com) is suggesting a 3m dish. I am coming over to NZ late in February to do a site survey with a swag of LNBs, Invacom, Fuji prime focus and Zin Tech prime focus as well as the new Acer LNBFU2 which we recently trialled for them. This would be a 3m at around 47 degrees elevation, I calculate. Your suggestions would be appreciated."

David in Australia

There is one fellow in an Auckland suburb with the appropriate 3m dish, receiver and authorised card - in fact

Canal Plus depends upon his observations to help them work out when I701 is drifting away from proper boresight. After several years of this, he reports there are periods of time (NZ's summer) when reception is reliable but right on the edge of losing it. In the 'other six months' it is less than 75% lock reliable. This 'observer' is not a techno-guy and frankly we have long believed a skilled individual could get maybe 2 dB more out of his system which would make a world of difference.

**PROGRAMMER
PROGRAMMING
PROMOTION****UPDATE****FEBRUARY 15, 2007**

Musical transponders. It appears that MTS (Maori Television Service) will remain on SKY NZ network but at some future date become FTA rather than CA. Whether this means it will not be on FreeView as well is unknown. Further, TAB (24 hour NZ racing channel) also appears to have decided not to be a part of the FreeView package "at this time." That would free up at least two programming channels on FreeView for new, additional services.

What's happening in the UK? BSkyB lost 11.9% of its cable and satellite subscribers during 2006, a reflection perhaps of the rapid take-up of terrestrial Freeview 30+ channel free to air service. However, during the same 12 month period, BSkyB Ireland, operated as a separate service because of programming rights issues, experienced the largest new subscriber growth in its history; now reaching 31% of all Irish homes. No coincidence - Ireland does not yet have a terrestrial Freeview type of service.

Oops. Australian Network scrambling, international service which has adopted a CA card option to control who and where their sports coverage can be viewed, ran into major problem on first telecast February 2 of Super 14s. The CA system did not work leaving viewers throughout the Asia-Pacific cranky. AN returned the transmissions to FTA, and ran a repeat telecast for those who missed the first portion because the encryption was operating. It is all a learning curve!

Maybe yes - maybe no. When a 430 home subdivision in southern Auckland began planning years ago for features which would make their homes unique, Telecom NZ agreed to lay in fibre to the home proper - not merely to the kerb. Sixteen homes are now being completed, years after the plan was announced, and Telecom has elected not to go ahead with their promised IPTV (Internet Protocol TV) trial there. Instead, the homes will be connected to a very fast (by any standard) 30 megabit per second broadband connection and granted a special low price to allow web access without huge penalties for downloading too much material. The original plan was to feature 1 gigabit per second downloading, and to provide unique movies and other TV services on demand to the households. Telecom in the interim has changed its direction, now concentrating on a faster ADSL2+ and a joint marketing plan involving FreeView-plus scheduled for launch sometime in 2008.

ADSL2+ in New Zealand, scheduled for March debut, will be restricted to homes within 4 cable kilometres of exchange facilities - although the roll out will cover only 50% of the exchange customers initially. The service should be up to three times faster than existing broadband speeds (suggesting something in the range of 750 kbps) and under current plans would (2008) include movies and other events on a pay per view basis using a new STB which will have both FreeView and IPTV combined.

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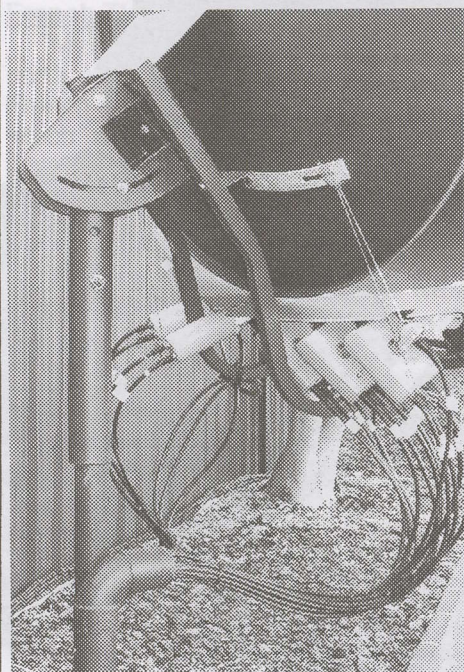
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From the top line EP 3000 EVO to the economical handheld S22, C30 and T40, Unaohm's claim to fame is sound measurement principles. Now supported in the Pacific by Laceys.tv's Factory Trained Repair and Cal centre, there are good reasons to make your next meter an Unaohm!

Toroidal 90 User Observation

"SF#149 article describing the Toroidal 90 antenna interesting as I have used one for several years with good results. Mine has 8 feeds on it ranging from I701(180E/W) through to Measat 2 (148E); all work acceptably although the some I701 transponders are a little marginal. I attempted to receive NSS-5 (177W) with it when ABC and SBS were using it - whilst I could see the signals with a spectrum analyser, there was not sufficient signal for lock. My only negative involves the LNBF holders; they are rather flimsy and work best with a short bodied LNBF. The long ones required additional supports at the rear (a piece of string!) to prevent their weight from misaligning the feed. Additionally, I use the same method to tension the B3 and Measat (western end of arc) feeds upwards at the rear to give maximum signal strength."

Roger Woodward, NSW



And thank you Roger for also providing our front cover photo for this issue! His results are an example of what good engineering, common sense, "and a hank of string" can do. Note he also found a 32 degree arc spread was about the maximum one can expect (see our report, page 12).

Clip-on?

"What about a clip-on second LNBF on SKY dish solely to feed the V/H via own coax run? Those with SKY subs adding FTA box through loopout of SKY decoder without involving SKY dish, multiswitches, or touching SKY twinhead LNBF."

Craig Sutton, APSATTV.com

HARDWARE EQUIPMENT PARTS

UPDATE

FEBRUARY 15, 2007

The FreeView "approved receiver/STB" situation. This is February 7. As of this date, the consortium group has approved only one STB for FreeView branded use; the Zinwell model ZMX-7500. We introduce you to this product starting page 7 here. A second receiver is alleged to be undergoing testing by TVNZ engineering personnel which is being very secretive concerning its origins and designs. SatFACTS believes the interim - possibly not 'real' - name of the UK company behind the design is '27M' - not exactly a world-brand quick recognition name. SatFACTS also believes this receiver, if approved by the consortium, will be distributed by the New Zealand office of Hills Industries. Our own attempt at locating '27M' led us to a factory which presently manufactures the 'Katherine' line of receivers but there is no reason at this time to believe it is a Katherine with a new name; merely the same production facility. Time marches on.

April 6th remains the unpublicised "official date" for kicking off satellite FreeView to the public at large. The first Zinwell brand receivers were scheduled for container shipment from Hong Kong around 7 February with a planned availability in NZ the week of March 1-7.

Two FreeView (or any other FTA) channels in two different household locations; one receiver? ASoft Limited (Porirua; 04 234 1096) is promoting viewing alternatives to digital viewers with KSF-620R2. Other models new to market include twin tuner, twin PVR version for simultaneous multi-channel recording and one previously recorded playback. See p. 28.

FreeView consortium (TVNZ engineering) plan to turn off B1 at 2359 31 January and restart on D1 a few hours later ran into snag. It was mechanical - the changeover actually took several days after discovering the uplink feed would not simply rotate from vertical to horizontal, "*because of the manner in which the dish was installed as vertical polarity many years ago.*" The future availability of pass-through services Bloomberg, CCTV9 and Deutsche Welle remain undecided but long term it is apparent they will not be "there."

Auckland Teleport continues missing on NSS-5 - first problem (early January) was reported to be a failure of an intermediate power amplifier stage (IPA); newer problems involve legal and investment concerns raised by those associated with the project. Rumours abound - bottom line; it is not functional and restart date is unknown.

Sinosat-2, China, is now offering pass-through reception from 31 programmers to 3-Star and higher hotels but only with individual hotel government (SARFT) permission. Channels are encrypted, government provides decoders only to approved facilities. Private residences are prohibited from viewing these services although residents from Hong Kong, Macau, Taiwan may apply for permission to acquire decoders and view services.

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Superjack H-H motor	\$95	Compass High Quality	\$10
2.3m SD mesh dish	\$130	RG 6 Crimp Connector 100 pack	\$25
3m SD mesh dish	\$340	22K switch	\$10
3m HD mesh dish	\$380	Two way DiSEqC switch	\$10
3" 2.5m galvanised pole	\$30	Four way DiSEqC switch	\$12
3" 3m galvanised pole	\$35	Satellite 2 way splitter	\$1.50
3" 3.5m galvanised pole	\$40	Satellite 3 way splitter	\$2
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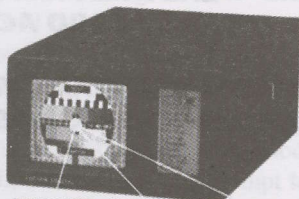
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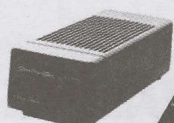
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LNBF \$24/each
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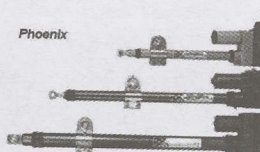
Moteck 2100 \$95ea



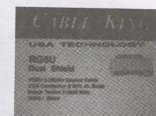
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Positioner \$50/each



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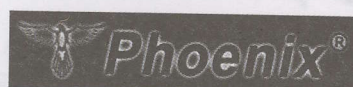


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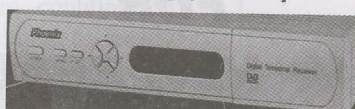


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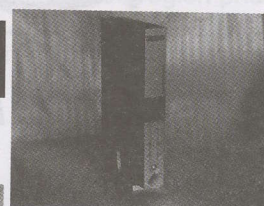
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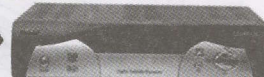
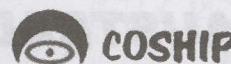
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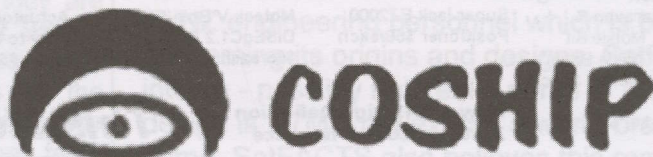
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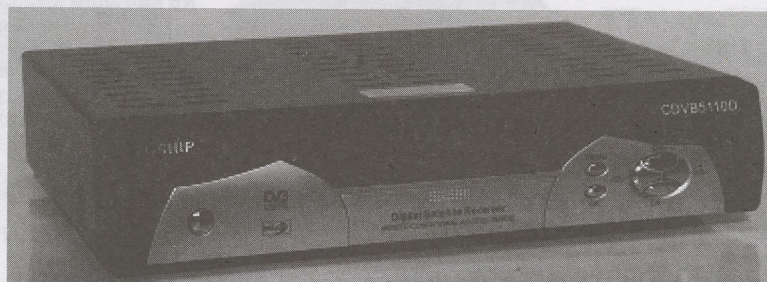
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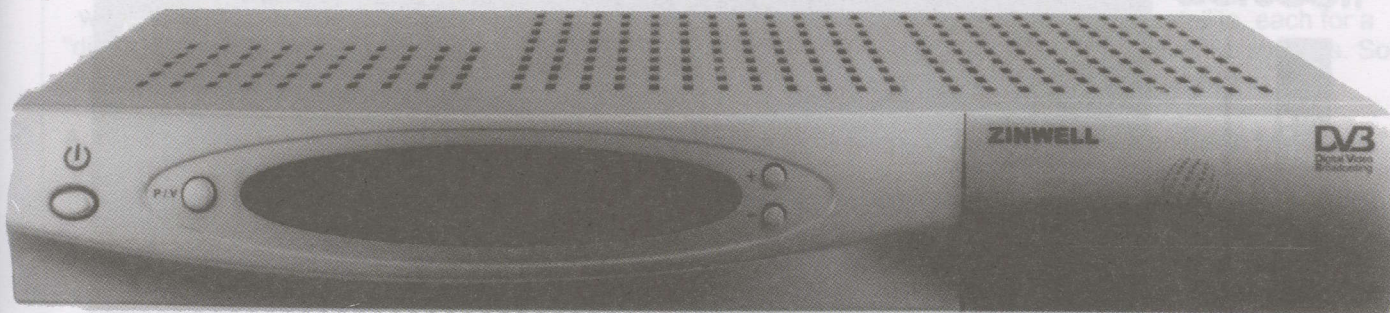
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FIRST FreeView (tm) Consortium Approved IRD announced



Zinwell model number ZMX-7500 apparently only STB approved (as of early February) by the New Zealand FreeView consortium for "approved sale". This receiver is likely to have a NZ\$200 region price tag from dealers.

FreeView's targeted launch date remains April 6 (2007). Commercial competitor SKY NZ has during January and early February greatly increased their marketing effort using phrases such as "switch to digital TV" as a lure, backed up by two months of free/no-charge movies. They are counting on consumer dumbness with the entire world of digital to greatly increase the take-up of their service before there is a commercially viable FreeView package available. On or about 6 April, their marketing program will have competition and the massive publicity barrage we expect from TVOne, TV2, TV3 and TV4 will launch to further confuse the consumer. In the interim, SKY NZ is giving away free movie packages to thousands of new clients.

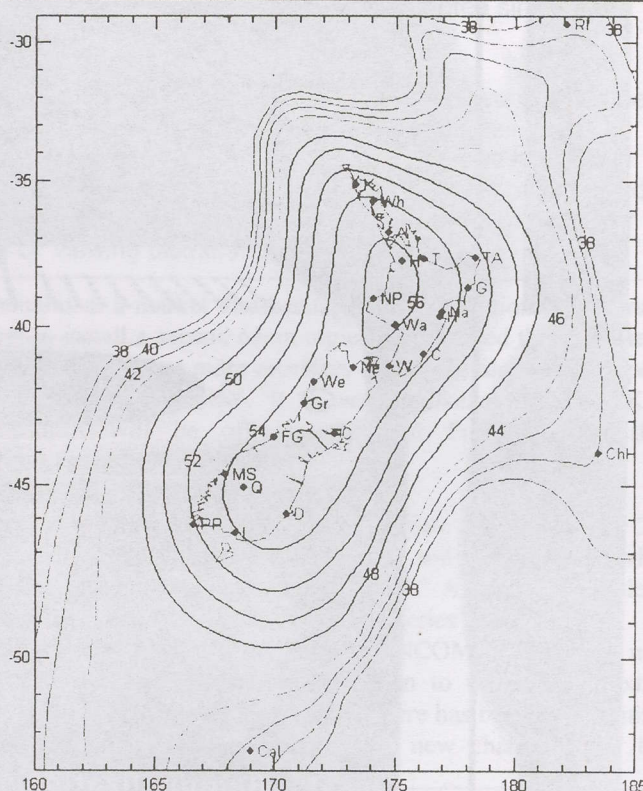
To conform or not to conform?

As a dealer or installer you have a decision: Do you go for a lower package price and sell hardware which receives FreeView just fine but without any of the special features the consortium has opted to include in "approved" receivers - or - do you become a part of the massive publicity program, which TVNZ is directing, and joining the consortium with their receivers?

There are advantages to both approaches.

As a consortium dealer selling an "approved" STB, your trade identity is pretty much assured by the advertising effort created by the consortium. In effect, you are the 'local' (your town, area) "consortium representative" and if you elect to participate with their planned training courses and other product packaging, nobody will be questioning who you are or what it is you are offering for sale. And that is a plus.

On the other hand, if you end up paying in the region of NZ\$150 for a consortium approved receiver when you could be purchasing a lesser but reception-adequate model for roughly half that price - well, a decision. We attempt to point out here why the consortium approved version costs more (it does more - far more) but it will be consumers who decide which level suits them. Logic suggests the front room or lounge family TV could be an "approved" version while second STBs for TV sets in kitchens, bedrooms and patios might be just as happy with a lower cost model. In other words, there is a distinct market for both versions and perhaps the intelligent dealer will handle both. Note this: The Zinwell ZMX 7500 detailed here is software adapted to check first for



The paper-projected D1 horizontal footprint for New Zealand. Remember - this is the 'official' footprint from the same folks who screwed up the polarisation and that suggests it may ultimately prove to be inaccurate.

Still unknown - whether SKY NZ will stay on the present vertical transponders or switch to horizontal.

a 11.300 GHz local oscillator and finding nothing there, it will go to do it again at 10.75 GHz - thereby covering both of the common pre-existing SKY TV installation packages one is apt to find.

"That" question - is it going to be OK to use an existing SKY TV dish for FreeView? There are several grey areas of law here. In a home where SKY has been disconnected and SKY has chosen (their decision) to leave the satellite dish, cabling in place, SKY claims it belongs to them; any other use must have their "approval". "Abandoned in place" (similar to

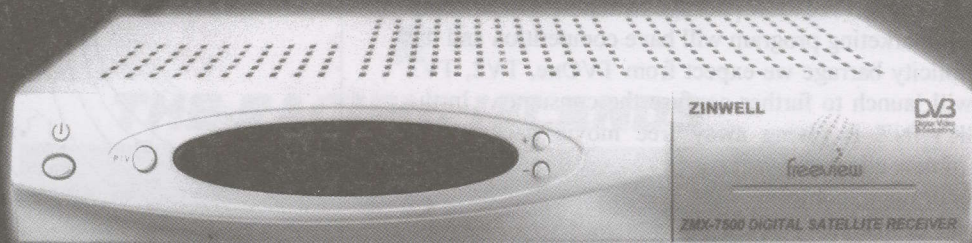


DIGITAL SATELLITE RECEIVER

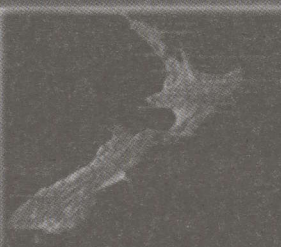
FREE-TO-AIR

USER MANUAL

ZMX-7500



Regionalization



Interactivity

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leaving a vehicle in the street and walking away from it) is another legal view; that one says that unless SKY has a written agreement claiming ownership of the satellite antenna/LNB/cabling on file for each such abandoned dish, it is *not* theirs. And for those homes that have left SKY where the antenna/LNB/cabling is still in place and there is a

How Zinwell solved TVNZ's Regional Service requirements

As SatFACTS reported (SF#149, page 2), TVNZ depends upon selling regional advertising for a significant amount of its advertising. The country could with terrestrial service be broken into districts and because TVNZ's then-owned BCL (now Kordia) provided the microwave and fibre interconnection from Auckland or Wellington to the full network, this gave the state owned TVNZ service an advantage in advertising sales; local advertisements for as few as one transmitter in their nearly 500 total (the sum of TVOne and TV2 relays). So understandably

TVNZ was reluctant to give up this revenue stream, Yet satellite distribution is a full-nation coverage plan and while it might be possible to load a quantity (4 or more) separate TVOne and TV2 feeds on satellite, each for a "district", the cost per month for the additional transponder space far outweighed the district revenue streams. So

how do you continue to sell regional advertising and yet not tie up expensive transponder space to send

district-specific advertising to regional areas of the country?

A TVNZ employee had the concept and Zinwell, as a would-be major supplier of FreeView reception hardware, they took on the challenge of creating hardware-software that would allow TVNZ to continue, even expand (with more and smaller districts) the original decades old concept. Here are some comments from Zinwell concerning the RSF system:

"For each of the Regions in New Zealand, 'Logical Channel Numbering' has been designed and adopted.

"TV channel numbering of FreeView is common for each of the initial 6 (but expandable to 12) regions:

"Button 1 on remote control unit (RCS) is TVOne

"Button 2 is TV2

"Button 3 is TV3

Button 4 is TV4 and so on up to 48 total channels.

"From the start of technical planning, TV services will/would be allowed to be advertised/promoted simply but dynamically as:

"'View' - channel 1, or, 'view - channel 7' and so on."

What this means to the installer and then the user is that those systems using the Zinwell RSF software will all be functional in an identical manner - ending some of the confusion that often goes with satellite delivered programming. Zinwell holds the copyright for this software and competitive receivers are unlikely to have this feature unless at some future date Zinwell elects to license other firms to use it. This unique system has attracted overseas interest and the UK's terrestrial version of FreeView is planning to implement it there on a much wider scale (given the far greater number of 'viewing districts' in the UK.

written agreement claiming ownership on behalf of Sky, another issue arises: Is SKY properly "compensating" the home with the left-behind antenna system, for "storage"?

To date SKY has not formally, in a public way, raised this issue and most are assuming that until they are told not to use a SKY dish antenna system for FreeView, they can and will go ahead doing so. Where SKY is already in a home, a paying customer, and the FreeView is fed through a signal splitter - well, that brings us to the "horizontal versus vertical" problem (see SatFACTS # 151, 152). SKY currently uses D1-vertical, FreeView when it is operational in April will be using horizontal; same satellite, different polarities. The solution to this (a special LNBF for example, clever state of the art DiSeqC switching) will await a future report here. If SKY does not switch to horizontal for its own service, FreeView

remains at a market disadvantage and installations for it may opt to install a second 65cm region dish to feed the FreeView services to one or more receivers in a home already equipped with functioning SKY. It is very unlikely certified SKY installers will be offering to "add FreeView" to the pre-existing SKY equipment!

This will be marketing driven

TVNZ has announced they will create and program a 24 hour seven day channel combining NZ and regional news with sport; scheduled start date "late 2007." A second FreeView channel using documentary and series programming is scheduled for "early 2008." CANCOM, TV3, has not announced nor hinted how they plan to utilise their extra satellite-only channels. For TVNZ, there has been the promise that neither of the two announced new channels will be

Other FreeView Features

MHEG-5 Interactive: It is this software application which the FreeView consortium believes will create a 'viewing experience' which will separate their service from the commercial SKY NZ subscription package. Each receiver, approved by the consortium for FreeView sale, includes a telephone socket which under direction from the incoming data stream will allow viewers to react or respond to items on the TV screen (Example one: A car commercial lasting 30 seconds is supplemented by a 'hidden data stream' that might include the car's full specifications, a listing of regional dealers and other sales information. Example two: Viewers are asked to vote using their remote control on questions posed by the program content.) Built into this is an 8-day EPG (electronic programme guide) allowing viewers to select programming by category (such as sports, weather, travel guides, politics, news, cooking and so on). This is believed to be the first time MHEG-5 has been software designed for use with a satellite service (in the UK it is used for their terrestrial service).

Over The Air software upgrades

Software in any of the consortium-approved STBs can be upgraded (enlarged, corrected, made more robust).

Antenna LNBF selection

Receivers meeting the consortium criteria will first select 11.300 (GHz) as the LO (local oscillator) frequency for an initial receiver loading scan; if that fails, it will automatically repeat the scan using 10.75 (GHz) as the LO without any user prompting.

Zinwell ZMX-7500 specifications

L-band receiver purposefully software loaded for New Zealand's FreeView satellite service.

IF Input: 950-2150 MHz; Input level range: -25>-65 dBm; Connectors: F female input and loop-through;

Demodulator: QPSK; Symbol rate range: 2 - 45 MS/s.

Video output: Formats: MP@ML; Aspect Ratio: 4:3 and 16:9 (selectable); Picture resolution: 720 x 576 (PAL) and 720 x 480 (NTSC); Connector: RCA and S-Video; Output level: 1Vpp+/-10% at 75 ohm load.

Audio Output: Formats: MPEG (Layer I & II); Sample rate: 32/44.1/48 kHz; Connectors: Mono, stereo, Dual (RCA); Output level: 2Vrms+/- 10% with 10K load.

RF Modulator: System: PAL-I/B/D/G/K; Channel: Ch. 21-69 ("which" UHF channel standard is in use here is not specified) + NTSC Ch 2, 3; Modulator output return loss (match): 6 dB to 75 ohm load; RF output connector: F type;

RF (aerial) throughpass bandwidth: 45 - 862 MHz.

LNB control: 13/18V DC (500 mA max); LNB switching: 0/22 kHz; DiSEqC: 1.0, 1.1, 1.2.

Channel capacity (memory): 1,000 maximum.

Front panel: Power switch (on/off); Four digital 7-segment display, 3 LEDs.

Rear panel: Tuner L-band input; L-band loop; RCA audio L and R; Component port; Composite port; Remodulator output; 9PIN data port; DC12V input (note: Power supply is wall-wart device separate from receiver proper).

Dimensions: 265 x 189 x 43mm.

General data: Operations temperature range 5C to 40C.

Accessories: RCU, User Manual, AV cable with RCA connectors.

available through SKY. But, in fact, with a slight modification to the existing SKY receiver software data stream, *all* of the FreeView channels could be available to *all* SKY subscribers provided the question of vertical versus horizontal polarity is sorted. Hey - if FreeView can "use" pre-existing SKY antenna system installations, why should SKY not be able to add any or all of the FreeView channels they wish to their bouquet?

All of this will be market and negotiation driven. SKY has certain controls they retain over equipment and software access while FreeView will have programming packages

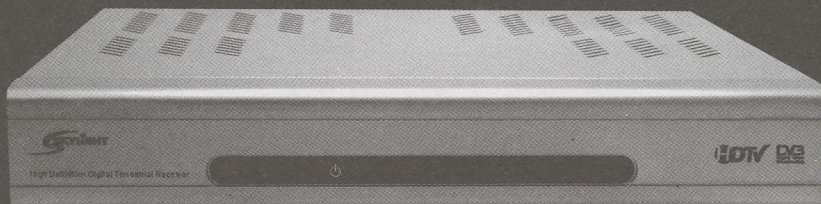
which SKY viewers would like to have in the future. How this sorts out over the coming 24 - 36 months is unpredictable.

Digital *satellite* will precede digital *terrestrial* by 6 to 9 months. When terrestrial is ready to sign-on the air, the emphasis of the marketing folks will shift gears mightily. As the satellite industry, we have a brief period of time where there is no built-in competition from the terrestrial version. It will be up to each of you to decide at what point you join this party, and how.

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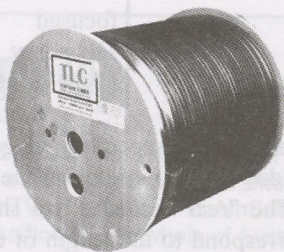
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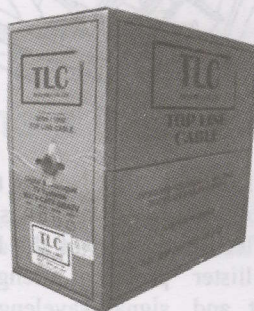
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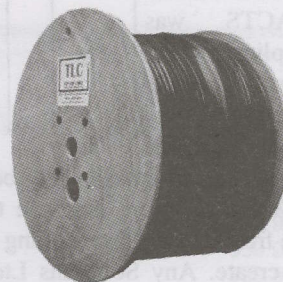
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Conclusion (for now): One reflector surface - up to seven satellites

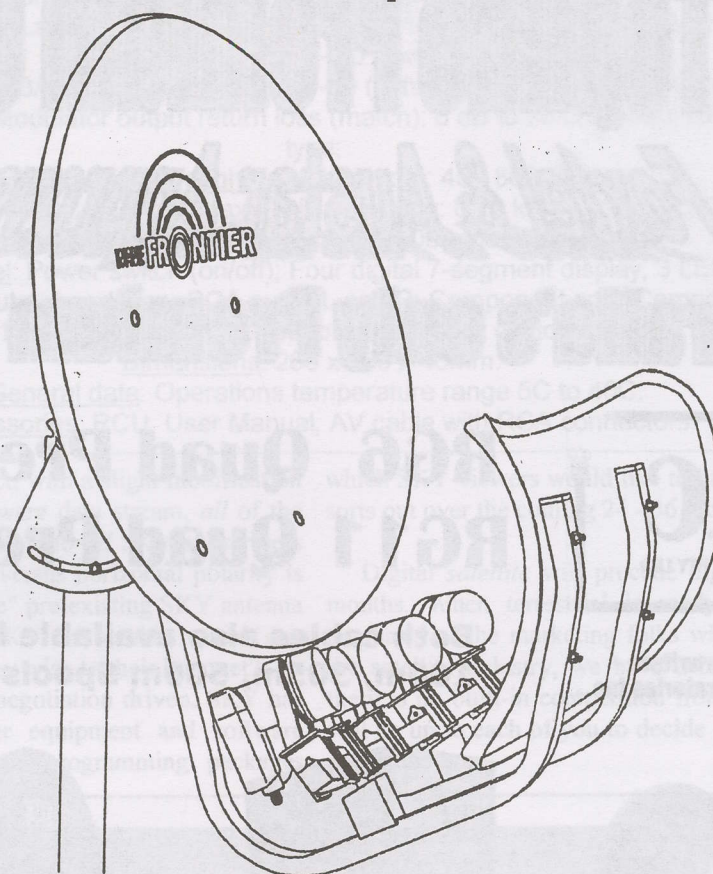
The Toroidal is a very complex antenna and while the supplier in NZ (1) insists it can be installed and made to function properly by a total novice, we would beg to differ. If you are joining us "in progress" locate a copy of SatFACTS #149 and read the initial portion of this report.

For Kiwi sites, the expanse of satellites extends from 177W (that "W" is for west, making it east of the 180 point) to 152E; that is a sky orbital range of 31 degrees. Some other published user reports claim the antenna is capable of a 40 degree orbital swath (expanse). We do not argue with these claims but in our case, in northern New Zealand, SatFACTS was unable to duplicate the previously claimed results even over our 31 degree azimuth range of satellites.

The bottom line: We ended up choosing between B1 (152E) and NSS-5 (177W) as we were not able to receive both of these two extreme from any dead-reckoning centre-of-reflector setting we could create. Any Solutions Ltd supplier Allister Todd would have preferred that we not report this fact, and there is always the possibility that between three of us working on and with the antenna, none of us were clever nor creative enough to duplicate his forecast results. Here is the challenge.

Double reflection

As described in SF#149 (p. 14-18), this antenna consists of a primary reflector (measuring approximately 1.1 metres in width by 0.9 metres in height), a secondary reflector that sits low-rider style in front of the primary, and then a metal railing



which allows individual LNBFs to be mounted under the primary reflector. In effect, the original satellite signal bounces twice before it is found by the LNBF. One important fact: Each time the satellite signal is reflected from a metal piece (primary and secondary reflectors), something is lost - approximately 76% of the signal that arrives at the primary reflector is reflected towards the secondary reflector and here again, in the best case 75% of that already diminished signal is focused from the secondary to the LNBF feed.

Restating some basics: Neither the primary nor the secondary reflectors are the "real" antennas. It resides buried inside of the "F" (feed) portion of the LNBF. The "real" antenna is a short metallic probe, of a length to correspond to the length of the Ku band signal wavelengths, one end of which "floats" in the air while the opposite end is directly connected to the input side of the first ultra low noise amplifier stage. Therefore, anything before this tiny probe antenna found inside of the LNBF is a potential problem to the ultimate performance of the system (defined as the reflector[s], the feed, and the LNB).

The engineers who have designed the Toroidal are smarter than the average antenna guys - by refining the curvature or shape of the primary (larger) reflector as well as the secondary

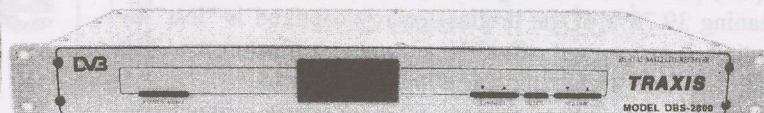
Satellite	Service measured	65cm/ dB	65cm/ %	90cm Toroidal/ dB	90cm Toroidal/ %
NSS-5	12.612V	8 dB	n/a	n/a	n/a
AMC-23	12.744V	12 dB	66/70	15 dB	71/80
PAS-8	12.644V	14 dB	71/83	16 dB	80/69
B1/D1	12.483V/ 12.420V	16 dB	73/76	18 dB	76/82
C1	12.478H	12 dB	70/68	12 dB	75/75
B3	12.407V	14 dB	71/73	14 dB	70/70



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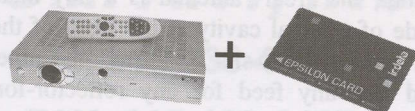
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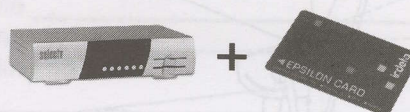
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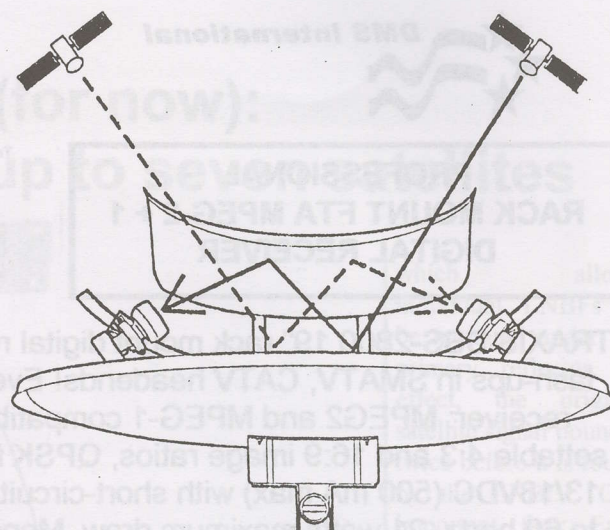
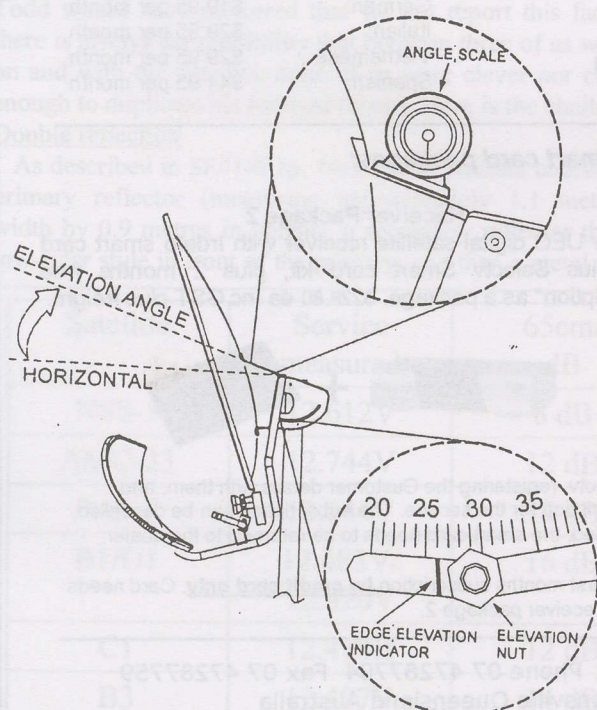
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(small) sub-reflector, they are essentially emulating what one finds in a double reflection optical telescope (the so-called Cassegrain device). This is no easy trick - remember that at best 75% of the energy captured by any reflector is transmitted to the "next stage" or device. Seventy-five percent of 75% is 56.25 percent of the original amount on the first reflector - meaning 39.75% of the original energy captured is "lost" by the time it gets to and off-of the secondary reflector. And that is the best case - seldom attained in the real world.

From the first C-band feeds in 1978 (designed originally by British experimenter Steve Birkill and U.S. antenna designer Tony Bickel), until today, the "percentage of reflector efficiency" has always been a tough design problem. To capture maximum signal the reflector must be as close to parabolic (a mathematical design equation) as possible. That means that any point - repeating that / ANY point) on the antenna's reflector surface is equidistant (the same distance to the nearest mm) from the centre of the feed antenna as any other spot on the reflector. Think of being inside of a perfectly round ball, in the exact centre of the ball, and from you to the inner surface of that perfect sphere is the same distance no matter where you look. The parabolic design is roughly the equivalent of one-half of a ball, cut down through the middle but leaving your "eyes" in the same spot as they would be if centred in a complete ball. Creating such a reflector is easy to say in print, very challenging in the real world of steel, aluminium, fibreglass.

That is half the challenge and in some ways the easiest half. The much tougher part is to then replace your eyes in the centre with a feed antenna that does what your eyes do - "sees" every part of the ball's inner surface with equal efficiency. In fact, in the real world, you cannot create such a feed. It is simply a physical impossibility. So you settle for a feed that sees 100% of the central say 50% of the inner surface of this

Elevation setting requires angle-finder supported on top of plate mounting main reflector to 60cm pole. See text comments.



LNB positioning - note that eastern-most satellites with double reflection end up on mounting rail opposite end (i.e. western most position).

imaginary half-ball, and then with progressively less efficiency the rest of the ball's inner surface out to the outer ring edge.

If this sounds like a challenge, it is. A feed is similar to one of your eyes, installed at the exact centre of the (prime focus) dish. If your eye is focused on a single object (try this with this page by closing one eye holding the page as close as you can and still read the words), the outer edges of what your eye can see becomes progressively less distinct - blurred. The feed (inside the LNB, or in the case of C-band, perhaps a separate device bolted to the LNB) is just like your eye - it "sees" the centre part with high efficiency but with lower and lower image accumulation as you approach the edges of what your eye sees - *the circle's outer edge*. Feed designers measure this change in "efficiency" in dB (decibels) and most feeds see the outer edges 10 to 15 dB lower in efficiency than the centre.

What this means is that the very outer edges of the dish contribute signal to the sum of all signals received but at a signal level that is up to 15 dB weaker or less than what it picks up from the centre of the "circle". This is the *real* challenge in feed design - how to capture the reflector area away from the centre with the efficiency of the centre point (think of it as "dish boresight").

Basically, it cannot be done. So when there are twin reflectors -the primary and the sub-reflector secondary, we have not one but two "edge of focus" challenges. Making it all work is a tedious, critical set of adjustments. And that brings us back to the Toroidal 90 antenna.

Remember, the "real" antenna is a tiny metallic "probe" sitting inside of a metal cavity at the front of the LNB. The probe plus the cavity it sits in forms "the antenna" for the system and like any feed for any reflector-format satellite antenna, it has a "boresight pattern" of its own; a "pattern" determined by the geometry of the cavity.

The double-bounce design of the Toroidal attempts to create a focused 'spot' on the sub-reflector portion and it is from this "spot" that the LNB's feed cavity plus probe locates signal. There is a warning here.

There are two basic antenna designs employed at Ku. One is the prime focus design which locates the feed at the exact centre of the round parabolic shaped dish. This is the design where the actual feed design dictates that the centre of the

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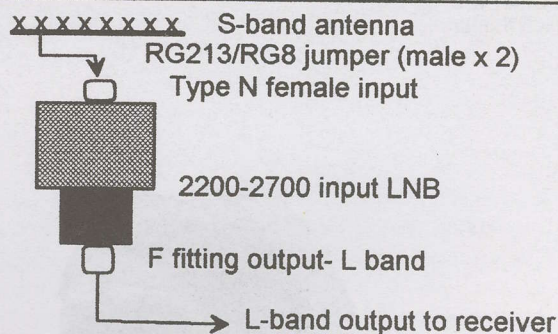
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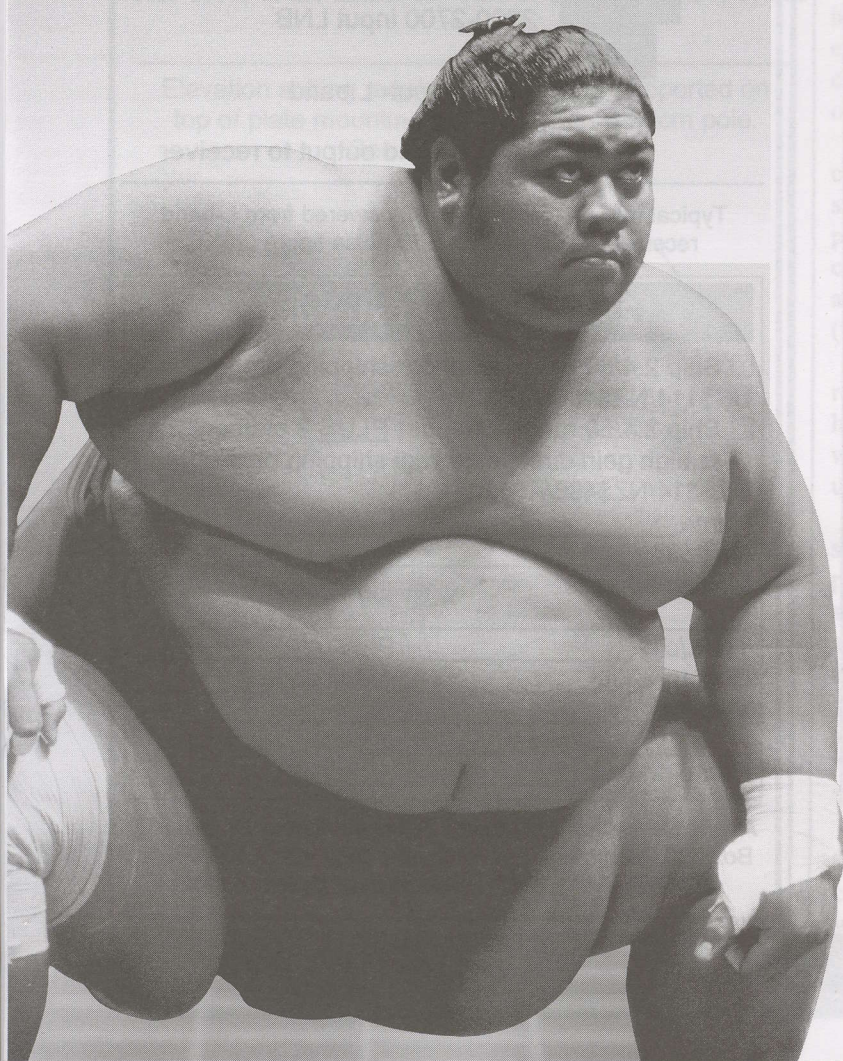
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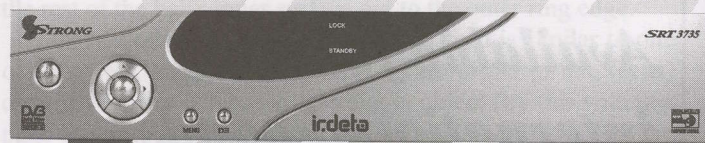
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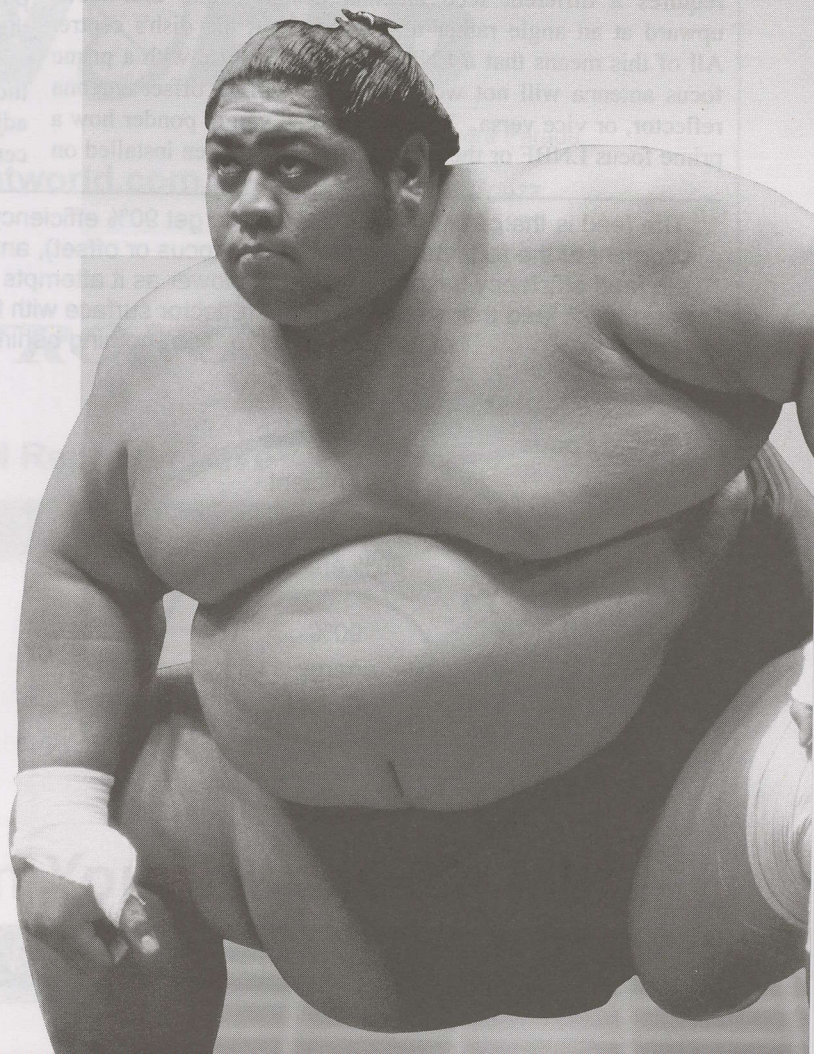
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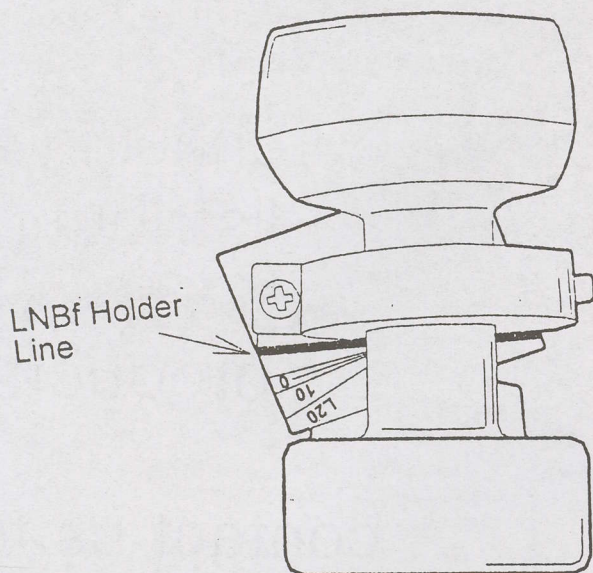
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Adjustment of LNBf "boresight pointing angle" is built into holder while adjust of elevation (angle up or down towards 'sweet spot' on secondary reflector) is done with ring-clamp holding LNB in position. The "seet/hot" spot on the secondary reflector is a mm-change slow step by step procedure to attain peak performance.

reflector is seen with high efficiency while progressively towards the edges the signal reflected and focused to the centre becomes less and less efficient.

The other design is called "offset" and this involves reshaping the reflector portion so that the intercepted satellite energy is focused not to the dish centre but rather to the lower edge. This "offset" of the focus point energy concentration requires a different feed antenna design - one that looks upward at an angle rather than squarely at the dish's centre. All of this means that a LNBf designed for use with a prime focus antenna will not work properly with an offset antenna reflector, or vice versa. This should lead you to ponder how a prime focus LNBf or the offset LNBf work when installed on

the Toroidal double reflector antenna. And whether someone with the necessary skills and metal working tools might create a totally different, optimised feed cavity for an LNBf for this antenna. In other words, is the antenna performing at its best when you casually slap a handy offset format LNBf on it?

Our tests

The table appearing on page 12 summarises our results. Remember, we began by making three separate measurements under clear sky conditions on each of six satellites (seven when B1 was still functioning at the D1 location), using a stock 65cm SKY NZ offset dish and a SKY sourced Sharp LNBf designed for this reflector surface. The dB carrier to noise level (C/N) for each satellite (save NSS-5 which was not functioning during our tests) and the signal level and quality were also recorded. From those three tests for each satellite in the table were then averaged and the result is the numbers you see there.

At that point the same Sharp LNBf was removed from the reference 65cm reflector and installed on the Toroidal. Again, the measurements per satellite and averaging resulting in the table numbers.

Our original intent was to pinpoint the Toroidal's primary reflector in the centre of our desired arc span - around 167.5E. This would place NSS-5 (177W) and B3 (152E) at opposite ends of the reflector and their corresponding LNBf at opposite end points on the LNBf mounting rail. In theory, between the NSS-5 LNBf and the B3 LNBf there could or would be up to five additional LNBfs spread along the rail, each one positioned for maximum signal capture from some orbital location within the 31 degree arc.

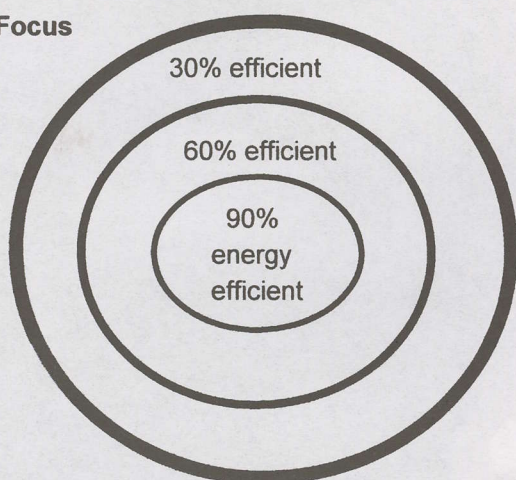
Our observations

There are three reflector portion adjustments: (1) elevation as with any prime or offset focus antenna; (2) azimuth (which we began by pointing at the previously identified 167.5 centre point of our arc), and (3) "skew" which is something unique to this antenna.

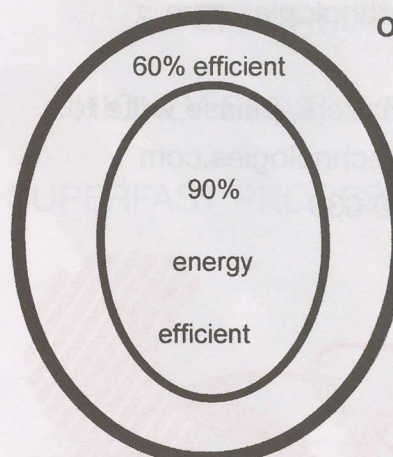
The recommended procedure involves placing one LNBf on the rail mount in approximately the centre of the rail, and then adjust the three settings (above) until you find a satellite at the centre point. Of course there is nothing at 167.5 so that left us

The feed is the culprit. If we were able to get 90% efficiency from a full reflector surface, rather than just from a segment of the reflector (whether prime focus or offset), antenna sizes could be scaled down dramatically. Alas, the feed efficiency becomes lower and lower as it attempts to "see" the outer edges of the dish. Nobody has yet designed a feed that sees ALL of the reflector surface with the same efficiency - and - stops abruptly at the edge of the dish so as to "see" nothing behind-beyond the reflector. See text.

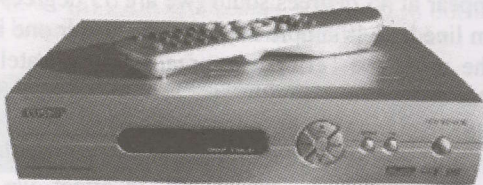
Prime Focus



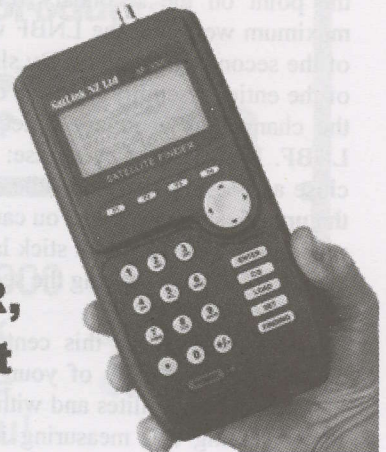
Offset focus



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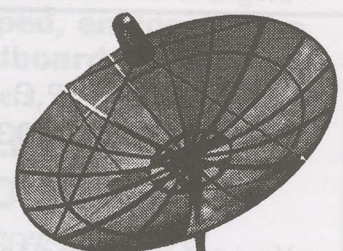
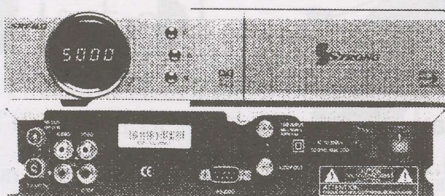
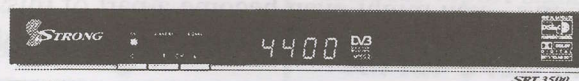
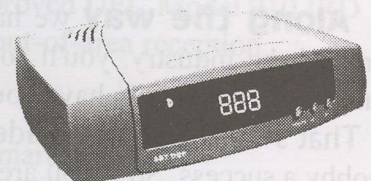
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Tel ; (03) 9768 2920
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www.satworld.com.au

50-52 Alexandra Parade
Clifton Hill, Vic
Tel ; (03) 9489 2977
Fax; (03) 9489 5977
Email; guido@satworld.com.au



Authorised Representative



Where Else Can Your Needs Be Met

to decide whether 166E (PAS-8) or 169E (PAS-2) would be our choice. We chose 166E but using the original 167,5E boresight point. The initial results were not outstanding as we moved the Sharp LNBF along the rail searching for the "sweet spot" here PAS-8 Ku peaked. All of this was done following the precalculated (by supplier Allister Todd) elevation, azimuth and skew settings. Eventually we worked out our problem - the adjustments for the LNBF allow you to move the boresight point left and right, up and down. Visually sighting the point on the secondary reflector where the signal was maximum we found the LNBF was pointed at the upper edge of the secondary reflector. By slightly increasing the elevation of the entire assembly (under 2 degrees) we were able to track the change in secondary reflector boresight as seen by the LNBF. Here is the key phrase: The LNBF wants to point as close as possible to the middle of the secondary reflector, not the upper or lower edge. You can visually sight this point even pinpoint it with a straight stick laid along the top of the LNBF extending to and touching the secondary reflector.

You want to get this centring correct with the satellite nearest to the middle of your arc before moving up to try locating other satellites and with each of these added birds the same sighting and measuring is advised with the secondary reflector. The caution is simply this - make the antenna array function to peak performance with the satellite nearest to the arc centre point before attempting any further out. You may, as we did, determine that very small adjustments to the elevation and skew are required. If you end up with multiple LNBFs all pointing at significantly different points away from the centre-line running through the middle portion of the secondary reflector, the antenna has not been optimised (and the results will be less than optimum).

Our original objective (177W to 152E) was not realised - a combination of two factors. First, the NSS-5 (Auckland Teleport) service stopped and was not available during our test period except for one brief instance. Second, and of greater technical importance, if we adjusted the azimuth/elevation /skew placing B3/152E at one end and NSS-5 at the opposite end, B3 was suffering (doubtless NSS-5 would have as well had it been there to complete tests). In our location, Far North of New Zealand, the combination of our elevation angle and skew forces the available satellite arc to expand wider than say it would appear at 45 degrees south (we are 35 degrees north). The bottom line here is simple enough - the closer one is to the equator, the more the "effective spread" of the satellite arc appears. Our compromise in this case is to write off NSS-5 for this particular antenna, swing our boresight (azimuth) centre point further to the west thus eliminating 177W while at the same time B3 improves by several dB. In effect, we end up with the antenna scanning from approximately 180E/W to around 149 E, moving B3 (and all other LNBFs) further along the mounting rail to the west.

Our recommendation

Were it not for the incredibly caring Allister Todd (1), our suggestion would be as follows: 'If you are still in a satellite learning curve, avoid this antenna.' But Allister is so good and genuinely helpful that our replacement suggestion is, *'there is good value here and for the real enthusiast, no other antenna will give you as much pleasure in getting the last fraction of a decibel from the complex structure.'*

1/ Allister Todd, Any Solutions Ltd., 64-3-6888-224;
http://www.toroidal.co.nz. OEM: WaveFrontier, tel
++82-2-5161600, fax ++82-516-1605;
www.wavefrontier.com.

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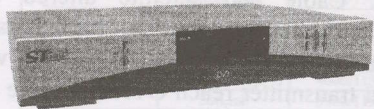
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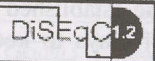
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DiSEqC H-H



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D-ST10 3.0Mtr Heavy Duty



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Outlining the challenges as the world turns digital - Part One

Primary problem

Existing television reception devices are analogue, will process only analogue.

Primary solution

Replace all existing devices (receivers, VCRs, DVD and hard drive recorders) with digital devices capable of accepting either wire-delivered or RF (broadcast) digital services.

Interim solution

Install a digital to analogue processing device (known widely as a set top box / STB) in front of the existing analogue-only reception devices, allowing on-going use of existing equipment until it is eventually replaced with digital-direct device.

Delivery method quandary

From the launch of the BBC regular scheduled TV service (1936) until today, the primary method of delivering television has been through the air, signals broadcast in the VHF or UHF regions, with individual transmitters covering areas up to 100km across. An elaborate world-wide industry has been built-up to support this delivery system, ranging from those who build transmission towers to firms providing consumer reception aerials.

Two 1980s and after alternate technologies appeared which modified the over the air VHF-UHF system developed in the 30s; cable TV and direct to home satellite. But the basics were unchanged by these two newer delivery methods - consumers still purchased analogue-format receivers. Only one subset segment of the original industry begun in 1936 changed as a result of these two developments: The firms creating and marketing rooftop VHF-UHF aerial systems and attachments. The broadcast side of the industry was little changed by either satellite or cable.

During the late 1990s, a new entrant appeared; television programming delivered into the home through the telephone wire connection. Until 2003-2004, television through a phone line was more of a curiosity (or joke) than a serious challenger to the established VHF-UHF broadcasters. No more. And this adds a new, legally serious element to the future development of television programme delivery.

The established order

Television programming with the exception of live sport and news has a "timeless value"; episodes of "West Wing" or "ER" need not be enjoyed when first shown or released to be enjoyed. Most TV programmes recycle through a complex licensing scheme for years, even decades, after first being shown. In this respect they are following a cinema industry pattern established in the early 1930s. Their greatest dollar value, to their creators, is however the 'first showing' just as a movie's initial theatre release attracts maximum consumer interest and revenue.

This system has allowed programme producers to treat each individual broadcast transmitter as a client or customer - selling them rights to 'first release' episodes. The revenue stream from broadcast station to producer depends primarily on the reach or coverage of the individual transmitter and

programmers base their per-episode fees on how many potential viewers each transmitter reaches (the larger that number, the greater the per episode fee).

Audience measurement firms act as validators of a station's reach and penetration. Cable and satellite altered this 'measurement system' slightly but only because through cable and satellite the potential audience size was larger than with the easier to verify direct transmitter reach OTA (over the air) technology.

Television programming delivered through a telephone system presents significant new challenges to the measurement game. Once a programme is connected to a server and then the web, what was once a 100km easily measured circle around the transmitter grows to a world-wide audience limited only by the technical constraints governing the telephone service. Further complicating this brave new world, a standard cable programmer channel, a TV transmitter located virtually anyplace on planet earth can be server to web connected.

From the programme creator's perspective, this is a major challenge to "the established order." Some numbers: An OTA transmitter with a potential audience of 100,000 homes pays \$1,000 for 'first-run' access to "ER." It is all neat and tidy. But suppose the programs from this transmitter ends up on the web and now the potential audience is bigger - perhaps hugely so. If the station-transmitter and programmer could agree on a new "potential audience" number, why not simply raise the cost of an episode?

This is the point where the 'established order' runs into major challenge two. After paying \$1,000 for an episode of ER, the station sends out sales people to locate sponsors who are willing to buy time in or adjacent to the popular programme. Money changes hands. Alas, these 'sponsors' are all within the station's OTA 100km circle of coverage, or, they are national brand names (Ford, for example) associated with a local (Ford) distributor of the product. Individual stations, of which there are tens of thousands world-wide, are not equipped to travel the world searching for advertisers to benefit from their sudden web availability. Clearly a yet-to-be-invented marketing strategy is required here.

One possible answer is to switch from advertising supported to viewer supported - open web distribution but close the portal to those unwilling to pay a fee to watch "ER". This sounds attractive, has some history in pay-per-view satellite and cable, but would leave the entire existing advertiser supported system in chaos.

Few television or programme creation executives are attracted to such a major change in 'the established order' and are in fact aggressively searching for ways to keep it from happening.

There are variations to all of this, none yet proven to be commercially viable in the face of ever developing new technology. Over the next decade, we can be comfortable only with one supposition: The television delivery system and business world of 2007 will hardly be recognisable by 2017. And that is your challenge - *how will you fit in?*

SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 Feb, 2007

Bird	Service	RF/IF &Polarity	# Program Channels	FEC	Msym	
Thcm5/78.5	SkyChAust	3695/1455H	up to 3	3/4	5(000)	
	ANT Greece	3672/1478H	1 TV	3/4	13(333)	
	TARBS ME mux	3640/1510H	12TV, 12 radio	2/3	28(066)	
	Ch Nepal	3626/1524V	1	3/4	15(556)	
	Mahar mux	3600/1550H	11TV, 1 rad	3/4	26(667)	
	RR Sat mux	3551/1600H	8TV,10 radio	3/4	13(333)	
	TVK Cambodia	3448/1702H	1TV	1/2	6(312)	
	TARBS/Th5	3480/1670H	12 TV+radio	2/3	26(667)	
	Thai Global	3425/1725V	up to 7?	2/3	27(500)	
	InSat 2E/83	ETV mux	4005/1145V	6+ TV	3/4	27(000)
Hyd Dig 2E		3910/1240V	1	3/4	5(000)	
Kairali TV		3699/1451V	1	3/4	3(184)	
Indian mux		3643/1507V	3	3/4	19(531)	
Sky Bangla		3430/1720V	1TV	3/4	6(000)	
Ant Pac (Greek)		11.104H-Australia	1 TV	3/4	2(800)	
Guangdong TV		4075/1075H	1TV + radio	3/4	6(000)	
Euro Bouqt		4000/1150H	5TV, 19 radio	3/4	28(125)	
SatLink		3960/1190H	3TV	3/4	27(500)	
Reuters News		3905/1245H	1TV	3/4	4(000)	
NSS6/95E	WorldNet	3880/1270H	4+/18radio	1/2	20(400)	
	APTN Asia	3799/1351H	1	3/4	5(632)	
	Reuters/Sing.	3775/1375H	1	3/4	5(631)	
	Macau MUX	4148/1002V	5TV	3/4	11(850)	
	Dubai MUX	4020/1430V	4+, radio	3/4	27(500)	
	Russian/Israel	3832/1318V	up to 4 video	3/4	7(271)	
	ArabSat#2	3820/1330V	8+ video?	3/4	27.5	
	Trace TV	3792/1358V	1	3/4	2(400)	
	BYU-TV	3767/1383V	1 + 20 audio	1/2	6(530)	
	3-ch miniMUX	3752/1398V	up to 3	3/4	5(640)	
Express2/103E	Saudi TV1	3660/1490V	7+tests	3/4	27(500)	
	Various-tests	3675/1475R	2	3/4	4(340)	
	As3S/105E	Chinese regionals	3671/1471V	2	3/4	8(932)
		CETV digital	3680/1470H	1+ TV	3/4	26(670)
		Zee bouquet	3700/1450V	10TV	3/4	27(500)
		Ch News Asia	3706/1444H	1TV (+)	3/4	6(000)
		Azio TV	3716/1434H	1TV (+)	3/4	7(000)
		BTW World	3725/1425V	1TV	3/4	4(450)
		TVB 8	3729/1421H	1TV	3/4	13(650)
		Zee Movies	3732/1418V	3TV	3/4	6(500)
TV One		3739/1411V	1TV	3/4	2(8934)	
SAB TV		3743/2407V	1TV	3/4	3(300)	
	Fashion TV	3747/1403V	1TV	3/4	2(625)	
	AAJ-TV	3750/1400V	1TV	3/4	2(820)	
	Arirang TV	3755/1395V	1	7/8	4(418)	
	Now TV +	3760/1390H	up to 10TV	7/8	26(000)	
	Star TV	3780/1370V	7(+)+TV	3/4	28(100)	
	GXTV	3806/1344V	1TV + 3 radio	3/4	4(420)	
	Shaanxi TV	3813/1337V	1TV + 2 radio	3/4	4(420)	
	Anhui TV	3820/1330V	1TV + 2 radio	3/4	4(420)	
	Jiangsu TV	3827/1330V	1TV + 2 radio	3/4	4(420)	
	HLITV	3834/1316V	1TV	3/4	4(420)	
	Star TV	3840/1310H	7(+)+ TV	7/8	26(850)	
	Star TV	3860/1290V	5(+)+TV	3/4	27(500)	
	Dragon TV	3886/1264V	1 TV	3/4	4(800)	
	Shaandong	3895/1255V	1TV + 6 radio	3/4	6(813)	
	CCTV1	3904/1246V	1TV, 1 radio	7/8	4(420)	
	Jilin TV	3914/1236V	1TV + 2 radio	3/4	4(420)	
	Star TV	3920/1230H	4+ TV	7/8	26(850)	
	CNN	3960/1190H	8TV, 1 radio	3/4	27(500)	
	StarTV	3980/1170V	6+TV	3/4	28(100)	
	Star TV	4000/1150H	8(+)+TV	7/8	26(850)	
	Sahara digital	4020/1130V	8TV, 1 radio	3/4	27(250)	
	Hubei TV	4035/1115H	1TV + 2 radio	3/4	4(420)	
	Tianjin TV	4046/1104V	1TV + 2 radio	3/4	5(950)	
	Sichuan TV	4051/1099H	1TV + 1 radio	3/4	4(420)	
	Qinghai TV	4067/1083H	1TV + 2 radio	3/4	4(420)	
	Hunan TV	4082/1068H	1TV + 1 radio	3/4	4(420)	
	Fashion/HK-Asia	4088/1062H	1TV	3/4	2(626)	
	Pakistani TV	4091/1059V	4TV, 1 radio	3/4	9(330)	
	Sun TV	4095/1055H	1	3/4	5(554)	
	PTV National	4106/1044V	1TV, 1 radio	3/4	3(333)	
	TVB8 Mux	4111/1040H	4 TV	3/4	13(650)	
	Indus News	4115/1035V	1	3/4	3(331)	
	CCTV bqt	4129/1021H	4 TV, 4 radio	3/4	13(240)	
	Zee Bqt #2	4140/1010V	8(+)+ TV	3/4	27(500)	
	Henan TV	4166/984V	1TV + 8 radio	3/4	4(420)	
	Fujian TV	4180/970V	1TV + 2 radio	3/4	4(420)	
	Jiangxi TV	4187/963V	1TV + 2 radio	3/4	4(420)	
	Liaoning TV	4194/956V	1TV + 2 radio	3/4	4(420)	
	Cak1/107.5	Indovision (S-band)	2.535, 2.565, 2.595, 2.625, 2.655	33(+)+ TV	7/8	20(000)
	T'Kom/108E	IndoBqt	3460/1690H	up to 6	3/4	28(000)
C2M/113E	TPI	4185/965V	1	3/4	6(700)	
	Anteve	4144/1006V	1	3/4	6(510)	
	Kabelvision Mux	4080/1070H	7+ TV	7/8	28(125)	
	Indostar	4074/1076V	1	3/4	6(500)	
	SCTV	3934/1216H	1	3/4	6(620)	
	Indo MUX	3880/1270H	3+ TV	7/8	28(121)	
	TVRI	3765/1385H	1TV	3/4	5(555)	

Receivers and Errata

CA (#1, 3); FTA audio #2
Late July 04: room for more (FTA)
CA + 23FTA(A1TV, IRB3, Visjon Norge, Pakistan)
New 03/03; FTA
Thai + Indian services; FTA inc. Vibe TV, Sindh TV
3TV, 5radio inc. Hellas TV Greece FTA
FTA
3FTA: TV5, VTV4, ATN Bangla
FTA (reaches SE Australia)
Several ETV now here; wide beam
SCPC, OK E. Aust. wide beam
SCPC, OK E. Aust wide beam
corrections 12/02
New - November 2002
Now CA; was 11 083H
July 04: FTA
FTA TV + radio; Russia,Port,Spain, Italy/Euro Bqr
Real Madrid (V769, A770) English FTA
Was 3923H, sometimes FTA
FTA; multiple audio services V2360, A2320
Sometimes FTA; also 3895Vt
FTA & CA
5 chs TV, FTA, some tests
FTA; Dubai Sports Ch some English, soccer-
Two Israel, two Russian (REN-TV)
New 107-06; initially parallel As3S 3 880H
new here Dec 2004; Euro-French music videos
Increased coverage; great variety audio chs(03-05)
Sun-TV, Surya TV, KTV (FTA)
FTA MCPC; Yemen, MBC EUROsport tests
Now loaded from 96.5E; svrl below 3900 all RHC
New 07-06; Yanbian, Jilin Satellite TV
replaces analogue same freq; V33, A32
Now SECA 2 CA (10-04); Radio Aust. Eng. A2011
English + V1160, A1120; 525, 625 versions
Was parallel to 3640Hz analogue (now gone)

Conax CA, all Hindi films
Also reported 3.333, 3/4 October 2005
SAB may no longer here here; moved to NSS-6?
new frequency October 2005
New April 2005; English, urdu
FTA SCPC; New PIDs V3601, A3606 June 2003
CA + FTA; DW, TV5; Al Jazeera English
NDS CA (Pace DVS211, Zenith)
Guangxi TV; was As2
Was As2
Was As2
Was As2; HeiLong
NDS CA (Pace DVS211, Zenith)
NDS CA (Pace DVS211, Zenith)
Shanghai
Apparently Mongolia

PowVu CA; new SR Apr 29; CNN radio FTA
NDS CA; Star News India FTA VPID 514, APID 648
NDS CA w/ 4(Chinese) FTA
New Sr September 2004
Was As2
new December 2004
Was As2
Was As2
Was As2
New July 2005
new Sr, channels, April 2006
"History Channel" - SCPC, some English

MATV Ch Movies now Irdoet 1
Hindi (+ "Plus"); day parts
moved from 4115
Now SECA 2 CA (10-04); 1 occ. FTA (varies)
Was As2
Was As2
Was As2
Was As2
NDS CA using RCA/Thomson.
Pace IRDs; 2.535 has 2 FTA. Bird now inclined.
also 3586H/17.500, 3496H/19.615
FTA SCPC; NT/NC only
change from 4055V; FTA SCPC
also try 3500H, 27.000, 3/4; strong NZ
New (but probably temporary) 07-06
FTA, may not be active full time
FTA; Sr change 01/03; erratic
bounces btwn FTA and CA; unreliable (12-04)

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
	SCTV	3726/1424V	1TV	3/4	6(620)
	RCTI	3473/1677H	2	3/4	8(000)
As4/122E	CCTV internal	4120/1030H	1	3/4	27(500)
Jc3/128	Miracle Net	3996/1154V	3 up to 6	5/6	22(000)
	Asian bqt	3960/1190V	up to 8	7/8	30(000)
Ap6134E	Multiple	4140/1010V	up to 8	7/8	27(500)
T18/138	Tests	3460/1690V	8	3/4	30(000)
Am3/140	STS +	3731/1419R	1	3/4	3(200)
Jc2A 154	BYU-TV	3915/1245V	1+ 20 languages	3/4	4(166) (?)
MeasSs2	Astro Mux	11 602H	up to 17TV	3/4	41(500)
B3/152	7 Cent. Feed	12 310H	1TV	3/4	5(100)
	AuroraBiz	12 407V	4 TV, 10 radio	2/3	30(000)
	UBI	12 425V	up to 13 TV + radio	3/4	22(500)
	Globecast 2	12 525V	13 TV, 8 radio	2/3	30(000)
	Globecast (feeds)	12 550-555V	1TV	3/4 & 2/3	6(110/670)
	Globecast	12 564V/T13	2+ TV	2/3	30(000)
	UBI	12 613H/T14L	11+TV	3/4	22(500)
	UBI	12 640H/T14U	11+TV	3/4	22(500)
	Globecast 1	12 658V/T17	14TV, 15 radio	2/3	30(000)
	UBI	12 674H/T15L	11+TV	3/4	22(500)
	UBI	12 701H/T15U	11+TV	3/4	22(500)
	WA ABC	12 702V	1 TV, 1 radio	7/8	14(288)
	WA SBS	12 720V	4TV, 2 radio	5/6	12(600)
	WA GWN/WIN	12 738V	2TV	7/8	14(295)
CI/156E	Aurora	12 324V/T11U			
	Pay TV	12 365V/T2	11TV, 2 radio	3/4	27(800)
	Aurora Home	12 407V/T3	5 TV, 13 radio	2/3	30(000)
	Pay-TV	12 447V/T4	5TV, 4 data	3/4	27(800)
	Pay TV	12 487V/T5	3+ TV, data	3/4	27(800)
	Aurora 2	12 527V/T6	7TV, 20 radio	3/4	30(000)
	Pay-TV	12 567V/T7	10 TV	3/4	27(800)
	Pay-TV	12 607V/T8	10 TV	3/4	27(800)
	Pay-TV	12 647V/T9	10 TV	3/4	27(800)
	Pay-TV	12 692V/T10L	6TV, 27 radio	1/2	28(650)
	Aurora MUX	12 728V/T10U	4TV, 17 radio	1/2	24(450)
	Austar	12 305H/T11	6TV, 24 data	3/4	30(000)
	Pay-TV	12 358H/T12	10 TV	3/4	27(800)
	Pay-TV	12 398H/T13	10 TV	3/4	27(800)
	Pay-TV	12 438H/T14	6TV, 3 data	3/4	27(800)
	Pay-TV	12 478H/T15	10 TV	3/4	27(800)
	Pay-TV	12 518H/T16	10 TV	3/4	27(800)
	Pay-TV	12 558H/T17	10 TV	3/4	27(800)
	Pay TV	12 598H/T18	10 TV	3/4	27(800)
	Pay-TV	12 638H/T19	10TV, 30 radio	3/4	27(800)
	Pay TV	12 688H/T20	11TV	3/4	27(800)
D1/160E	Sky NZ test	12 394V	TV +	3/4	22(500)
	SBS SE	12 451H	TV+	5/6	12(600)
	Sky NZ	12 519V	TV+	3/4	22(500)
	Sky NZ test	12 519H	TV+	3/4	22(500)
	ABC NSW	12 514H	TV	7/8	14(294)
	ABC South	12 532H	TV	7/8	14(294)
	ABC Northern	12 550H	TV	7/8	14(294)
	ABC Western	12 577H	TV	7/8	14(294)
	ABC Victoria	12 595H	TV	7/8	14(294)
	ABC Qld	12 613H	TV	7/8	14(294)
	Southern Cross	12 744V	TV + 1 radio	3/4	5(100)
	Sky NZ Test	12 644V	TV		
I8/166E	SelecTV	12 526H	8+TV	3/4	28(800)
	CCTV	12 557H	3+TV	3/4	13(240)
	ABS-CBN	12 575H	4+TV, 4+ radio	2/3	13(845)
	MYSAT	12 646H	up to 8 TV	3/4	28(066)
	JEDI/TVB	12 686H	11+ TV	3/4	28(126)
	PnGlobal Aust	12 726H	6+TV	3/4	28(066)
	ABC A-P	4180/970H	2TV, 2 radio	3/4	27(500)
	Hallmark Asia	4166/984H	1 TV	3/4	6(620)
	Disney Pac	4140/1010H	typ 6 TV	5/6	28(125)
	Hwazen TV	4130/1020H	1 TV		
	NHK Joho	4060/1090H	7TV, 1 radio	1/2	16(180)
	FOX Mux	4040/1110V	up to 5TV	7/8	26(470)
	NET +	4121/1029V	1 TV	3/4	4(774)
	ESPN USA	4020/1130H	8+TV, data	3/4	26(470)
	Discovery	3980/1170H	8 typ.	3/4	27(690)
	CalBqt/Pas8	3940/1210H	up to 3+ FTA	7/8	27(690)
	CNBC HK	3900/1250H	up to 7TV	3/4	27(500)
	FilipinoMUX	3880/1270V	up to 8TV+radio	5/6	28(694)
	CCTV Mux	3829/1321H	up to 4 + 1 radio	3/4	13(240)
	TVBS-N	3836/1314V	1FTA, 4+ CA	3/4	17(500)
	EMTV PNG	3808/1342V	1 + 2 radio	3/4	5(632)
	CNNI	3780/1370H	3, up to 5 TV	3/4	25(000)
	Discovery Asia	3764/1386V	Up to 6 TV	3/4	19(850)
	MTV	3740/1410H	8	2/3	27(500)
I2/169E	WA Mux Pv	12 281V	3+ TV, radio	2/3	27(500)
	Ariang TV	12 401V	1TV	3/4	4(400)
	ABS-CBN	12 575H	4TV, 2 radio		13(845)
	Test mux	12 715H	6+ TV	2/3	30(000)
	TARBS feeds	4090V/1060V	9TV + radio	3/4	21(000)
	BBC SCPC	3986/1164H	1TV	1/2	5(700)
	Middle East	3836/1314V	4 typ	3/4	13(331)

Receivers and Errata

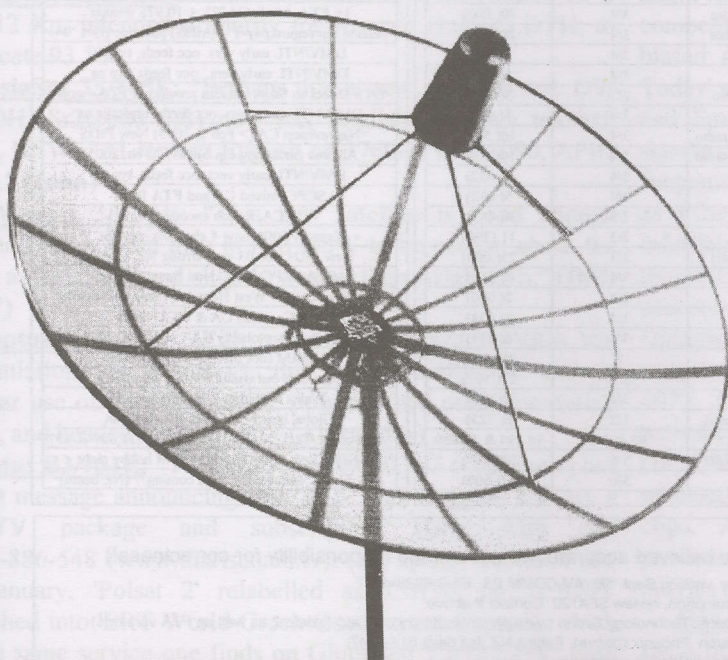
was on 4048V; New Caledonia, parts of Australia
 FTA SCPC; or, 3774H, 6 520, 3/4 (June 06)
 Irdeto 2; 4060V HDTV CA; also try 4020V
 PowerVu; some FTA (Ch. 1 & 3)
 CA & FTA NTSC: Japan, Taiwan
 (ApStar 6: also 4180V same #s; some analogue also)
 also try 3660/3540Vt, Sr 30 000, 3/4; some FTA
 North beam; also try 3875R, 12 475, 1/2
 Strong NZ & Australia; may now be 1/2, 6 525
 Aust East beam - 3 FTA + 14 CA
 Was B1; moved June 2006, concerns B1 failures
 differs from 12 407 C1; tune ch FTA; NZ+Au
 Now Irdeto V2
 NZ + Au, FTA + Mcript CA
 occ feeds, NZ + Au; recently 12 553V
 AMTV, Healing only FTA svcs now here
 High performance beam; not NZ; new CA 07-06
 High performance beam; not NZ; new CA 07-06
 NZ + Au (Mcript, PowVu capable)
 High performance beam; not NZ; new CA 07-06
 High performance beam; not NZ; new CA 07-06
 ABC WA tests, FTA
 SBS, radio tests WA FTA
 Irdeto V2 CA, tests (GWN, WIN)
 not currently in use
 Tests, SBS-NDS CA, others FTA when here
 NZ (90cm) + Australia (Only C1 svc left on NZ)
 Australia NA only (leakage to Norfolk, New Cal)
 Australia NA only (leakage); 9-Net x 3 widescreen
 Arrow radio (still here), tone FTA
 Pay-per-view movies; CA
 Pay-per-view movies; CA
 Pay-per-view movies; CA
 ABC for Foxtel/Austar; previously 12 288V
 changes September 2005
 Austar inter; Expo FTA
 NDS CA + Mcript; CA
 CA, subscriptions available Australia, Norfolk
 Sky News active; 'Help x 2' FTA
 CA, subscriptions avail Au, Nrlfk; TVSN FTA
 CA, subscriptions available Australia, Norfolk
 "Home"CA, subscription available Australia, Nrlfk
 CA, subscriptions available Australia, Norfolk
 CA, subscription available Australia, Norfolk
 CA, subscription available Australia, Norfolk
 + 12 420V, Au + NZ beam
 +12 469H/Qld, 12 487H/South,
 +12 546V, 12 581V, 12 608V, 12 644V: NZ only
 +12 546H: NZ only
 Australia only
 Australia only
 Australia only
 Australia only
 Australia only
 Australia only
 Australia only
 +12 671V, 12 707V, 12 734V: NZ only
 & 12 286, 12 326; FTA prev. 526 V10112, A1012
 FTA-Australia
 CA -Australia
 FTA V=5340, A=790 -Australia
 June 2002-Irdeto-2 CA - Australia
 Some FTA-Australia
 Dateline west; also east PAS2, 3901V
 Temporary FTA (January 2007)
 PowVu CA
 PowVu CA & FTA; sub available-changes 05-06
 was PAS-2, previously 3992Vt, feeds FTA
 NET25 + FTA, new PIDS April '03; reload
 PowVu CA; ch 11 DCP-CCP bootload; audio FTA
 PowVu/CA (some audio FTA)
 PowVu CA & FTA (EWTN + CBS + TBN +)
 NDS CA (6 channels); one test card occ FTA
 Myx FTA V1960, A1920 + radio FTA
 PowVu FTA, replaces PAS-2 svc
 CCTV cross pole, new SR 04-06
 PowVu CA
 PowerVu; some audio FTA
 PowerVu; Asian MUX, new parameters Nov '03
 # 8 MTV China FTA V289, A290; rest CA
 PowVu CA, WIN, ABC NT, SBS; status unknown
 Test - may not stay permanently
 Temp FTA; subs Aust 011-800-2270-0722
 initially with 6 NTSC colour bars
 Occ FTA (Chile +); BIG power reduction Nov 03
 BBC World moved here January 2005
 Subscriptions available; Strong Technology



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Email: info@psau.com <http://www.psau.com>

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(PAS2/169E)	Adventists.tv	4040/1010H	1	2/3	5(900)
	Feeds	3868/1182H	1	2/3	6(620)
	Feeds	3939/1211H	2 (typ NTSC)	2/3	6(620)/7(498)
	Cal PowVu	3901/1249H	up to 8	3/4	30(800)
	HK bouquet	3850/1300H	up to 8	2/3	24(900)
	Korean Bqt	3771/1379H	1	3/4	6(510)
AMC23/172E	Various-tests	12.730H	up to 8	3/4	30(000)
I804/174E	iPSTAR	12.619H	1	2/3	25(220)
	Tests-NZ beam	12.646H	1	3/4	22(418)
	RFO Poly	4027/1123R	1TV	3/4	4(566)
I701/180E	TNTV	11.060&11.514V	9	3/4	30(000)
	TVRFO	11.136V, 11.174V	6+TV, 3+ radio	3/4	23(149)
	Canal+Sat	11.610H	16TV, 1 radio	3/4	30(000)
	PBS	12.648HH	16TV possible	3/4	28(066)
	TVNZ/BBC	4186/964RHC	1	3/4	5(632)
	TVNZ	4178/972RHC	1	3/4	5(632)
	AFRTS DTS	4175/975L	3 TV, 3 radio	2/3	3(680)
	TVNZ/Aptn	4170/980RHC	1	3/4	5(632)
	Fiji Sky Pacific	4095/1055LHC	6TV + future radio	3/4	16(505)
	Fiji Sky Pacific	4055/1095LHC	7TV + future radio	3/4	16(505)
	TVNZ/feeds	4052/1098RHC	1	3/4	5(632)
	TVNZ feeds	4044/1106R	1	3/4	5(632)
	NBC to 7 Oz	3960/1190R	1	7/8	6(447)
	TBN Mux	3927/1223R	4TV	2/3	11(394)
	WorldNet	3886/1264R	1TV, 37 radio	3/4	25(000)
	Ioarana	3772/1378L	1	3/4	4(566)
	NASA TV	3854/1296R	1 TV	3/4	2(000)
	TVNZ	3846/1304R	1	3/4	5(632)
	NBA (Barker) Ch	3803/1347R	1	3/4	6(111)
	USA feeds	3749/1401R	4?	?	26(400)
NSS-5/177W	Pacific IP Data	3763/1387R	none-data	3/4	27(500)
	RFO/Tempo	3920/1230R	1	3/4	2(893)
	BYU-TV	4185/965R	1TV, 20+ audio	1/2	6(525)
	Australia Temp.	12.522V	8 SCPC	7/8 & 5/6	14.294 & 12.600
	Auckland Teleport	12.612V	New Mux 01/07	5/6	28(989)
	iPSTAR Tests	12.691V	8 TV	5/6	17(600)

Receivers and Errata

New December 2003; 24/7 "Hope Chs."
FTA (occ sport); also try 3863, Sr6.100
FTA-typ NTSC-occ sport, live Shuttle
PowVu CA + FTA (includes BBC-W 05-05)
was 4148V; some FTA
Korean MUX, reload 12-04; new Sr
Testing on NZ/East Australia beam
Tests, late May start; also 12.646H
Testing possible data links; June 2003
SE spot beam; was 4027LHC
east spot; 10TV + r each, vertical pol.
FTA 11.136 Tahitian beam, 11.174 west beam; 12/04
1+ FTA, MediaGd "2"; + 10.975 weaker
Testing Fiji region pay-TV (MDS) package (Oct '04)
DMV/NTL early vers. occ feeds, typ ca
DMV/NTL early vers. occ feeds, typ ca
'DTS Direct to Sailors; audio previously FTA - gone
DMV/NTL early vers. occ feeds, typically ca
Nagravision CA (> Feb 1, 2005) New PIDS
All now (including Fiji 1) CA; 7 Feb, 2005)
DMV/NTL early vers. occ feeds, typ ca
SCPC, mixed CA and FTA feeds
CA, Leitch encoded
January 2006-now 4 channels, new Sr
New PIDS Dec 03 very strong NZ, Pacific
FTA SCPC, East Hemi Beam-Tahiti
24/7 live NASA - West Hemi bm (can be difficult!)
SCPC, mixed CA & FTA, feeds
NBA feeds - probably CA - new Nov 2003
16-QAM (not MPEG-2 compatible)
Data only but useful for dish alignment
Wallis & Futuna Island(s) service
Global beam - requires sizeable dish
Aust beam: 12.522, 538.555, 574.604, 621.639 & 657
NEW Sept 2006, Tuesday 8PM hobby night
CA Tests - Taiwan TV; data coming?? (NZ beam)

MPEG-2 DVB Receivers: (Data here believed accurate; we assume no responsibility for correctness!)

AV-COMM R3100. FTA, excellent sensitivity (review SF May 1998); new version Sept. '99. AV-COMM P/L, 61-2-9939-4377.

AV-COMM Tiny Tot. FTA, 12Vdc operated, palm sized, low power consumption; review SF#120. Contact # above.

Coship 3188C. Review SF#107. Blind search FTA rcvr; works well. Phoenix Technology Group (www.phoenixsatellite.com.au) (Irdeto 2 as well as FTA versions)

Coship FTA, CA, HDD. Review SF#143, state of art functions, blind search. Phoenix (above), Satlink.NZ, fax 64-9-814-9447;

Divitone: "Left-handed" review SF#115; does "code key" entry. Available <http://www.satmax.ws>

eMTech eM-100B (FTA), eM-200B (FTA + C1x2), eM210B (FTA + 2xCI + positioner); KanSat 61-7-5484 6246 (review SF#89)

eM-150/Homecast. FTA + embedded multi-format, review SF#144. Sciteq (61-8-9409-6677) and Kristal (61-7-4728 7704)

Fortec Star Lifetime. Two versions, both blind search, code-key programmable, one X 2 CI. Review SF#119. www.aDigitalLife.com

Homecast (em-150, eM-1150, eM-2150) series of FTA, CA, HDD state of art STBs, review SF#144, Sciteq (www.sciteq.com.au)

Humax ICRI 5400 (Z). Embedded Irdeto + 2 CAM slots; initial units had NTSC glitch, now fixed. Widely available; new software avail 04-04, SF#76.

Humax IRCI 5410 (Z). Adaptable version capable of holding multi-CA systems (SF#98, 99). Widely available; original importer Sciteq (www.sciteq.com.au).

Hyundai-TV/COM. HSS100B/G (Pacific), HSS-100C (China) FTA. Different software versions; 2.26/2.27 good performers, 3.11 and those with Nokia tuners also good; later 5.0 not good.

Hyundai HSS700. FTA, PowerVu, SCPC/MCPC. Review SF March 1999. Kristal Electronics, 61-7-4788-8902.

Hyundai HSS800CI. FTA, Irdeto (with CAM) + other CA systems, PowerVu, NTSC. Kristal Electronics, above; review SF#63.

INNOVA IDS3088. Review SF#111. Blind search FTA receiver. High quality IRD; available Phoenix TechnologyGroup, and Satmax (<http://www.satmax.ws>).

ID Digital CI-24 Sensor. New August 2003; new lower noise tuner, extra sensitivity; CI Interface slot Irdeto 1 & 2; review SF#109. Sciteq 61-8-9409-6677.

KSF-570 FTA digital receiver, import, KSC-570 adds CI x 2 (no test or user results available). Asoft Limited, 64-4-234-1096

KSC-N550H2 'Premium Dual DVR' digital receiver (no test or user results available). Asoft Limited, 64 4 234 1096

MediaStar D7.5. New (May 00) single chip FTA; review June 2000 SF. MediaStar Comm. Int. 61-2-9618-5777 (www.mediastar.com.au)

MediaStar D10. FTA and Irdeto embedded CA. VG receiver; see review SF#96, August 2002. Contacts immediately above.

MultiChoice (UEC) 660. Essentially same as Australian 660, not grey market contrary to reports. Sciteq tel 61-8-9306-3738

Nokia "d-box" (V1.7X). European, FTA, may only be German language, capable of Dr. Overflow software. SF#95, p. 14.

Nokia 9200/9500. When equipped with proper software, does Aurora, originally did pay-TV services provided software has been "patched" with "Sandra" or similar program. See SF#95, p. 14, SF#96 p. 15. [SatWorld](http://www.satworld.com.au) 61-3-9773-9270 (www.satworld.com.au)

Pace DGT400/DVR500. Originally Galaxy (Now Foxtel+Austar). Irdeto, some FTA with difficulty (Foxtel Australia 1300-360818). UECs replaced.

Pace "Worldbox" (DSR-620 in NZ). Non-DVB compliant NDS CA including Sky NZ, no FTA; similar "Zenith" version (see SF#115, p. 15).

Phoenix 111, 222, 333 models (no longer produced): Service, backup - Phoenix Technology Group 61 3 9553 3399; www.phoenixsatellite.com.au

Pioneer TS4. Mediaguard CA (no FTA), embedded Msym, FEC, only for Canal+Satellite (AntenneCal ++687-43 81.56)

PowerVu (D9223, 9225, 9234). Non-DVB compliant MPEG-2 unless loaded with software through ESPN Boot Loader (see below). Primarily sold for proprietary CA (NHK, CMT etc). For service only - call Scientific Atlanta 61-2-9452-3388. For revision model D9850, see Scientific Atlanta (below).

PowTek. Blind Search Chinese sourced, field tests rate it highly. Source jason@aDigitalLife.com

Prosat 2102S. FTA SCPC/MCPC, NTSC/PAL, SCART + RCA. Sciteq 61-8-9306-3738.

SatCruiser DSR-101. FTA SCPC/MCPC, PowVu, NTSC/PAL. (Skyvision Australia 61-3-9888-7491, Telsat 64-6-356-2749); no longer available.)

SatCruiser DSR-201P. FTA SCPC/MCPC, PowVu, NTSC/PAL, analogue, positioner - (Skyvision - see above); no longer available.

SATWORK ST3618. Blind search FTA receiver. Fast search, problems, especially in "memory-filing" system; review SF#111. Available DMSi at tim@dmsiusa.com

SATWORK ST3688. Blind search, 3000+ ch memory, multi-format RF modulator; improved version 3618. Review SF#113; available DMSi (above).

Scientific Atlanta D9223, D9234, D9225. Orig. PowerVu, superseded Dec 2003 by D9850. Commercial receiver, available TVO 61-2-9281-4481, John Martin

Strong Technologies SRT2620. SCPC, MCPC FTA, exc sensitivity, ease use, programming. Review SF#91 (ph. below).

Strong SRT 4600. SCPC, MCPC, PowerVu; exc graphics, ease of use, review SF#64. Strong Technologies 61-3-8795-7990.

Strong 4800. SCPC, MCPC, embedded Irdeto+ CAM slots, does code-key with additional software, Aurora. Strong Technologies 61-3-8795-7990.

Strong 4800 II. SCPC, MCPC CAM slots x 2 for Aurora +, Zee, Canal +, code key with additional software. Strong Technologies (above); review SF#103.

Strong 4890. SCPC, MCPC, 30Gb PVR, 2 CAM slots, DiSEqC 1.0, 1.2 (review SF#84), does code key with additional software; Strong Technologies, # above.

UEC Atlas/Titan (1000). New July 2003, replacing DGT400 for Austar. No SCART, L-band loop; also available Rural Electronics 61-2-6361 3636.

UEC642. Designed for Aurora (Irdeto), approved by Optus; w/new software, C-band FTA; faulty P/S. Norsat 61-8-9451-8300.

UEC660. Upgraded UEC642, used by Sky Racing Aust., Foxtel, limited FTA. (Nationwide - 61-7-3252-2947); P/S problems.

UEC700/720. Single chip Irdeto built-in design for Foxtel; unfriendly for FTA. Power supply problems, seldom sold to consumers; propensity to fall off back of trucks.

"X" Digital. When modified with "aftermarket" Internet softwre, does Aurora and other V-1 CA without card; review SF#119. Strong Technologies (61-3-8795-7990).

Accessories:

Aurora smart cards. MCRYPT (Irdeto V2) cards now available (Jan 2005), Sciteq 61-8-9409-6677.

PowerVu Software Upgrade: PAS-8, 4020/1130Hz, Sr 26.470, 3/4; pgm ch 11 and follow instructions (do not leave early!)

PowerVu (Pacific) repair service: Cable & Sat Svcs, Darius West, 61-2-9792-1421 (Email darius@cases.net.au)

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Launch scheduled: Insat 4B, March 10 from Ariane; 12 C and 12 Ku, intended primarily for Ku-side (Indian) DTH; to co-locate 93.5W.

AsiaSat 3S/105E: "Perhaps this is new, perhaps not: DW (3760H, Sr26/000 7/8) now has English language teletext. (DM, NSW) "Al Jazeera English on 3760H, VID 1090, APID 1091." (John)

Measat 3/91/5E: "This new satellite is good enough (C-band) on a 1.8m dish in mid-NSW to be usable; about the same as AsiaSat 2 and slightly weaker than AsiaSat 3S." (DM, NSW)

Optus B1/160E: "With turn-off of TVNZ/FreeView test transmissions on 12.483Vt, this is essentially the end of regular use of the B1 satellite; now inclined orbit, increasing daily, and headed for disposal." (Alexander)

Optus B3/151E: "T5/12.525, Sr 30.000, 2/3 (Globecast) has a text message announcing that 'TTN' and 'Deepam TV' are a pay-TV package and subscription starts with call 1300-886-548 (www.tharisanam.tv). (IF, Qld.) "Towards end of January, 'Polsat 2' relabelled as 'Ch130' on 12.640V morphed into 'ERT World-Greek Government Channel' which is the same service one finds on Globecast T5/12.525V; both are FTA. (IF, Qld.) " On February 18th, 6:30PM Sydney time, there should be a live FTA feed of 'Tropfest' which is the annual awards ceremony of Australia's independent short films. Unfortunately this is an Australian only footprint so Kiwis will miss out. (AI, NSW) "T13/12.563H, the 'Armenian TV Channel' service has stopped. The graphic that appeared after the test airing read, 'You have been watching the test transmission of Armenian TV. For more information and the availability of this service in Australia, contact Armenian TV Email alik@armtv.com or visiting www.armtv.com in the comments section." (NS, Victoria).

Optus C1/156E: "Al Jazeera English is here - it does not load on a Nokia or Satworks but does load without a label on a Fortec (T2/12.367V, Sr 27.800, 3/4 VPID 1121, APID 1122, FTA). A DVB2000 PID search will also find it, and it has been running (unannounced) since mid-January. Video quality is quite good, running a constant 3.2 MBit/s, resolution 720 x 576 pixels. UBI had also been rebroadcasting the same (controversial) service in a CA format but at a reduced video-data-rate of between 1 and 2 MBit/s. This same C1 transponder has two programme channels labelled as 'spare' which are CA or colour bars. This same transponder also has the USA heavily Bush-biased 'Fox News Channel' on it. I must

admit I find Al Jazeera not nearly as frightening as the competitors and President Bush have proclaimed. It is less biased and more about good journalism than, say, 'Russia Today' which when compared to CNN (always American bias) and Fox News (total Bush government bias) has been the standard of comparison until now. One thing it seems to do frequently is to openly 'attack' CNN and 'Fox News Channel' as if they were some sort of enemy. There is interesting if not infallible material here but I doubt it will turn me into a terrorist!" (DM, NSW) "The Foxtel 'iQ' boxes now have two new services available. 'On Demand' and 'Remote Record'. On Demand offers a selection of Foxtel programmes for the iQ to record - transmitted on T9/12.674V, Sr 27.800, 3/4 at VPID 4072, APID 4072. Remote Record allows the iQ to have the recording schedule programmed by a PC or mobile phone.' (IF, Qld) On T19/12.638H, Sr 27.800, 3/4, channel 'Club' has renamed to 'Channel [V]2' which airs continuous music video clips. Also new here, 'Box' (V-1021, A=1022) which previously broadcast movie clips as promos now has normal movies to 11PM followed by 'Adults-Only 'R' rated films.

Optus D1/160E: "Seven Central feed has returned to the same frequency where it was originally on B1; 12.637Hz, Sr t.100, 3/4, FTA with one radio channel attached." (DM, NSW). Australian services previously temporary NSS-5 (177W) have now settled here: ABC NSW + ABC on 12.521Hz, ABC South + 2 on 12.539Hz, ABC Northern + 2 on 12.556Hz, ABC Qld + 2 on 12.574Hz, ABC Victoria + 2 on 12.604Hz; SBS SE and World News to 12.622 Hz, SBS Qld. and News on 12.640Hz, and SBS South and News on 12.658Hz. (Anthony) "Blind scan here in Brisbane - all of the ABC and SBS regionals + Seven Central on H pol (no sign of Imparja), plus SKY NZ (box office) on 12.393V, Sr 22.500 and 12.421V, 22.500 at 85% signal level and 75% quality on 85cm dish. Anyone want to 'trade' NZ authorisation for Australia?" (DH, Qld.) "TVNZ/FreeView package has returned to 12.483Hz, FTA, Sr 22.500, 3/4 on NZ Vt beam." (Stephen) "Indigenous Community TV on 12.643 Hz, FTA." (Perry)

Soapbox: "Using a modest-sized 1.8m C and 90cm Ku band dish on a Moteck tracking motor system, I can load 16 C-band satellites and 12 Ku. It is unfortunate so many people have given up on satellite direct when in fact there is far more here than at any time in the past, even with very modest (neighbour pleasing) antennas. (DM, NSW) "Analogue? Not much left but I did find during a January sweep on Apstar 6

WITH THE OBSERVERS: Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. **Photos of yourself, your equipment** or off-air photos taken from your TV screen **are welcomed**. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady.

Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for March 15th issue: March 4th by mail or 5PM NZST March 5th if by fax to 64-9-406-1083 or Email skyking@clear.net.nz.



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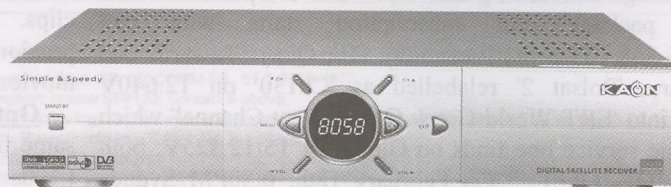
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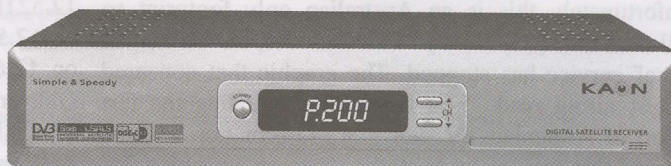
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Website: www.asoft.co.nz/kaon/

These firms are available to do contract dish installs

Fiji Islands

C.B. Communications, **Sigatoka** (Ph6520227; cbcom@connect.com.fj)
Safeway Electronics Ltd, **Suva + Lautoka + all islands** (Ph 3395300/6666822; safeway@connect.com.fj)
SATSHEK Communications, **Suva** (Ph3307933; parmarbros@connect.com.fj)

New Zealand:

Tauranga TV Svcs Ltd, western **Bay of Plenty** (ethnic Ku packages) (Ph 07 578 7276; dave-tts@clear.net.nz)
Raycom, **Coromandel Peninsula/Waihi/Tairua** (B1 FTA) (Ph 07 864 8083; raycom@slingshot.co.nz)
Frontline Electronics, **Mosgiel** region (ethnic Ku packages) (Ph 03 489 4001)
Advanced Aerials, **Napier/Hawkes Bay**, comcls (Ph06835 6618/021 272 6618; advanceaerials@xtra.co.nz)
Nelson TV & Video Svcs, all **Nelson Bays** (Ph 03 548 0304; ntv@tasman.net)
Rexels AV Electronics Ltd, **Palmerston N, Manawatu, Hawke's Bay, Wanganui** (Ph 06 357 6186; rlblair@infogen.net.nz)
John Stewart, **southland** including Otago (john.s@tritec.co.nz)
The Antenna Man, **Taranaki** (Ph 06 758 1633; antenna.man@xtra.co.nz)
Quality Pics, entire **Waikaito** region (Ph 0800 007 667; maxnkay@xtra.co.nz)
Smartzone, **Wellington-Wairarapa-Palmerston N** (C+Ku) (Ph 029 289 6333; info@smartzonesystems.co.nz)
Homestead HiTech, **Wellington, Masteron-Levin** (PAS-2, B1, B3) fitzgera@ihug.co.nz)
Waipu Cable Television, **Wellsford to North Cape** (*Bluekiss*), (Ph 09 4320 973; waipucable@xtra.co.nz)

Australia Wide

Regional Outcomes (60+ locations, **all states, territories**) (03 9923 7333; installs@regionaloutcomes.com.au) (*)

New South Wales:

Woolgoola Antenna Service, **Coffs Harbour** (50km radius) (Ph 0266561889; woopaerials@iprimus.com.au)
Town & Country Antennas, 60km radius **Murwillumbra/Tweeds Heads** (Ph 02 6672 8595)
Newcastle Satellite, **Newcastle + Lwr Hunter Vly** (Ph 0249614449; satellites@netcentral.com.au)
Home Satellite TV, 40km radius **Port Macquarie** (Ph 02 6584 3838; kazbah25@optusnet.com.au)
Goodcom Communications P/L, 100km radius of **Walcha** (Ph 02 6777 1044; goodcom@northnet.com.au)
SAT TV Ltd (**Northern NSW, Qld**). C, Ku, DT, agent for LBF-French; (1300 884 262; www.sattv.com.au) (*)

Northern Territory

ALLSAT TV, **Darwin and NT**; (Ph 041 863 3720; allsat.tv@pacific.net.au)

Queensland:

Cape York Electronics, **Cooktown and "the cape"** (started 1970s) (Ph 07 40 695 252; cyechn@tpg.com.au)
Phil's Antenna Systems, 100km radius of **Hervey Bay** (C+Ku since 1996). (Ph 0741 256 273)
Rick Dalton TV & Satellite, 100km of **Kawana Waters** (C + Ku). (Ph 07 5493 4343; rick@antechtv.com.au)
Teleworks, 100km of **Cairns** (C + Ku). (Ph 0412 84115; rajvrm@aol.com)
Videotronics Mackay, **Mackay/Whitsundays** radius 200km. (Ph 07 495 575 052; sales@videotronics.com.au)

South Australia

Central Eyre Comms, **Arno Bay-Eyre Penins.** (Ph 08 8628 0203; centraleyrecomms@ozemail.com.au)

Tasmania:

.65 Electronics, **Launceston and Northern Tasmania** (Ph 03 63 330820; sales@65group.com)

Victoria:

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Leden Communications, (100km radius) **Glengarry** (Ph 0427 745105; leden@netspace.net.au)
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Solomon Islands

Satellite Solutions, **Honiara + all Solomon Islands** (since 1994) (Ph 677 25589; satsol@solomon.com.sb)

Thailand:

JSAT tv/Jon Clarke, **ex-pat community - nationwide** (Ph +661 513 5418; info@jsat.tv)

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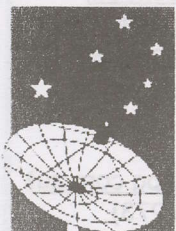
(134E) 'CCTV1' on 3980V. Also on the satellite called 'ABS1 - previously 'LMI', Madagascar TV is running in PAL analogue (in the past it was in SECAM analogue). (IF, Qld) "New Zealand's Regional Service Function" (SatFACTS # 149) could also be used for regional news breaks focusing on the regions from which the news items originated. It seems a shame not to use this new software for more than inserting 'regional/area' commercials!" (Tony) "In Australia Telstra has been promoting 16 Foxtel channels delivered to a mobile

"NextG" phone for \$12 a month provided the user signs a contract - length of which is unstated in the promotional material." (Simon, NSW) "There is a German designed Telefunken Micro Set Top Box available in Australia Target stores which breaks up the terrestrial digital adapter into two physical parts: One attaches to the front or side of a TV set with a short control cable going to the actual STB that can hang on or be buried behind the TV receiver. As most TVs, in particular the smaller screen sizes, do not have a built-in

digital tuner, this is probably the neatest method of adding DVB-T reception to an existing analogue receiver. A small LCD TV set could still be portable, although by design analogue only, without the need to haul around a normal STB that in many cases is physically larger than the TV set." (Archie) "We are a new FTA satellite website; www.ezfilezone.com. Includes FTA receiver support, channel lists." "It is my understanding SKY NZ is signed up for additional transponder space on Optus D2, and the charges begin the day the satellite officially goes into service. If this is correct, they have until D2 is operational to replace all of the single throat/satellite (D1) LNBFs with the new dual bird two throat versions - for without the second joint LNBF their customers will not be able to access D2 at 156E. This could be an interesting scenario to follow - can they get a few hundred thousand LNBFs changed out in time to meet the D2 operational date (which to the best of my knowledge remains uncertain)?" (AU, NZ) "We have 60mm pipe mounts for Toroidal antenna (this is the *only* correct size!) for roof, eave, wall mounting." (Allister Todd, NZ). "Some of us have followed with interest the arrest and detention of a 53 year old New Jersey man who it is alleged was helping terrorists by providing satellite receiving equipment for reception of Al Manar, alleged to be a TV outlet for Hizballah. Saleh Elahwal, a US citizen, was charged with an 11 count indictment by the Bush administration Justice Department for 'providing material

assistance to a known terrorist group.' A second man was also arrested and similarly charged. Both defendants have participated in supplying satellite receiving equipment for Al Manar, which the US government claims in court was an act in support of the terrorists. The equipment they sold, at a profit which according to the charges indicated they were 'profiteering from terrorism', was standard FTA hardware readily available to anyone in North America from numerous sources. What set the two defendants aside from others who sold the same systems was their publicising of the availability of Al Manar in their literature and web advertising. Had they been less specific, for example calling Al Manar 'Television from Lebanon', it is unlikely the federal action would have resulted. The government of Lebanon was amongst those protesting the arrests. That country's information minister, Ghazi Aridi, noted that the very same Al Manar television channel is available on the web, streaming in real time, 'with an average of 1.1 million hits per week' which suggests at least the audience of the service beyond a few hundred that might in fact invest US\$200 in Ku-band equipment to receive the same service from satellite. The American Civil Liberties Union has joined the defence counsels but the two defendants were required to post US\$400,000 bonds to be released." (Jeremy)

Note: Next issue of SatFACTS, Marh # 151, scheduled for release March 15th.



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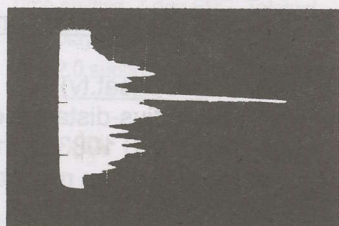
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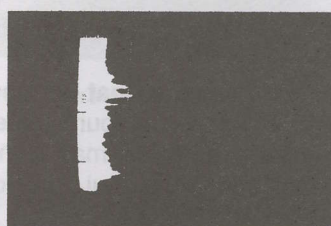
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Since late 2004 broadband interference in the C-band satellite spectrum has been ever present in the Sydney metropolitan area wiping out an estimated 10,000 C-band viewers as well as many commercial sites. This interference caused by Unwired Australia has now spread to Melbourne. To fight this interference, Av-Comm has designed a range of products to allow customers to continue using C-band systems.

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Bob Cooper
P O Box 330
Mangonui
Far North
New Zealand.

19 July 2006

Dear Bob,

Many thanks for the copy of *Television's Pirates* which has just arrived -- I can barely lift it!

I'm very glad you wrote your memoirs, because this is a fascinating collection of anecdotes and a vital part of the TV broadcasting and satellite communication history. It's a part that official writers and pure academic researchers may well underplay in their own accounts.

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of the TV broadcasting and satellite communication history."**

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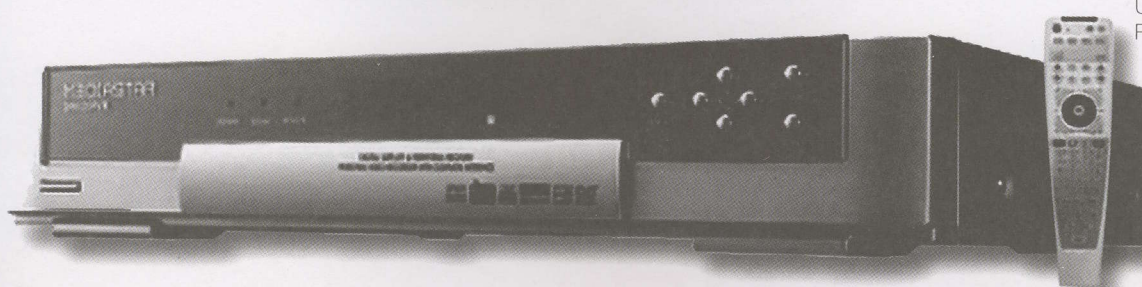
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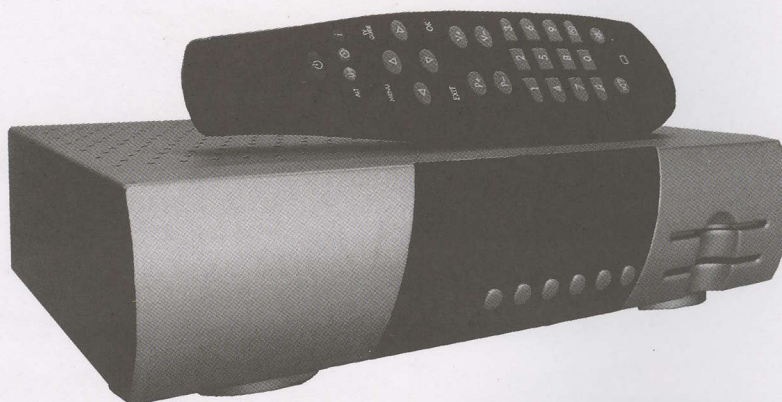
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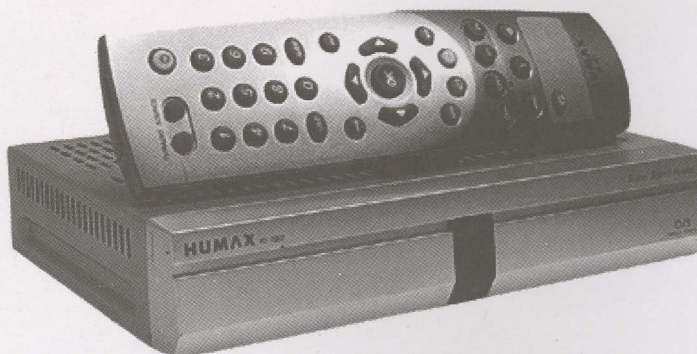
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